THE LANCET.

VOL. I.] LONDON, SATURDAY, OCTOBER 26, 1833. [1833-34.

UNIVERSITY OF LONDON.

LECTURES
ON
COMPARATIVE ANATOMY
AND
ANIMAL PHYSIOLOGY,

DELIVERED BY

ROBERT E. GRANT, M.D., F.R.S.E.,
&c., &c.;

Fellow of the Roy. Coll. of Physicians of Edin.; and Professor of Comparative Anatomy and Animal Physiology in the University of London.

LECTURE III.

ON THE CLASSIFICATION OF THE ANIMAL KINGDOM.

In treating of the structure of the lower animals, and in describing the development of the various systems which enter into their organization, it is not my intention, Gentlemen, to leave out any particular class of animals because they may be low in the scale, or believed to contain objects very little interesting to the medical man or the philosopher. It is understood that you have come to this apartment to see the organization brought gradually into being, and to trace their parts gradually superadded until they arrive at the objects which are conceived to be of the most importance, because most immediately connected with and most nearly related to the human organization. It behoves me, therefore, often to use terms which I am well aware cannot be familiar to you, as they do not often occur in the other departments of medical education. It is necessary, however, in the present state of the science, to use a very definite language in order that the facts stated regarding the development may be more precise, more accurate, and more valuable. On this account I have generally at some part of the commencement of the course, introduced one or sometimes two lectures upon the classification and subdivision of the animal kingdom. As zoology forms the subject of a separate course of lectures, I find it inexpedient to devote more than one lecture to this part—the subdivision of the animal kingdom. We require this on account of the constant employment of subdivisions which are not commonly used, and in order to give greater definiteness and value to the descriptions hereafter to be given.

Now the animal kingdom comprehends beings the most diversified as to form, structure, and media in which they live; for we find some organised to fly through the air, others to creep on the earth or burrow under its surface, and others to descend into and inhabit the depths of the sea. The position of animals, however, with regard to the surface of this earth is not at all connected with the degree of elevation of their organization or their complexness of structure. The *structure* of animals is the basis on which classification is founded. The simplest structures are expected to be found in the lowest divisions, and structures gradually become more and more complex as we ascend in the scale.

When we place a drop of any decayed infusion of animal or vegetable matter under a powerful microsope, and throw a light through that drop, and through the microscope to the eye, we discover in the drop of water various forms of living beings, some of a rounded, some of a lengthened form, and some exhibiting ramifications shooting in all directions, but all apparently of a soft, transparent, gelatinous, and almost homogeneous texture. Those beings constitute the lowest

form of animals with which we are at present acquainted, and they were at first considered to be astomatous and agastric, and were called *infusoria*, but that denomination, you perceive, taken from their locality, is not explanatory of their structure but of their *habitat*.

Upon examination it was found, that there existed animalculæ of a higher denomination, even as high as crabs and lobsters; they exist in every stagnant pool of water, in every river, and in the ocean. There exist also extremely minute red-blooded worms, and other classes of animals, in the same infusions with the simplest forms of animalcules.

Upon examining with great care many years since the effects of *coloured* infusions upon those minute animalculæ, it was found that they devoured great quantities of the coloured matter in which they were placed, and that in devouring it thus rapidly, they conveyed it into internal cavities or stomachs, which are sometimes extremely numerous in them. Those cavities exist in almost every known genus. Sometimes there are nearly 200 stomachs in a single animalcule. Animalcules occur belonging to this class, so small that nearly 500 millions are contained in a single drop of water, that is, as many as there are individuals of our own race on the face of the earth.

Now in those minute beings which constitute the simplest forms of animals, there are numerous stomachs, and that in almost every genus (of which there are a great number),—the lowest class is therefore called *polygastrica*. Those little animals are found not only in animal infusions, but they are found in the stagnant waters around all our cities; they are found in the waters of harbours, of rivers, of lakes, and, as far as we know, in every drop of the ocean which is in a fluid state. I have myself examined them in various parts of the western islands, in an excursion with Dr. Hooker, Dr. Greville, Dr. Thomson of Glasgow, and other naturalists at a great distance from land. In the summer of last year I had an opportunity of examining them in glass tubes, taken at sea on my way to the Land's End in Cornwall, a great way from the sea shore. From their nature there is reason to believe they are by far the most numerous living beings that exist on the face of this planet. They constitute the simplest forms of animals. They are the food of higher classes, particularly of zoophytes. They constitute, many of them, the embryo of more perfect animalcules, which curious observation has been confirmed by the recent researches of Professor Ehrenberg.

On the shores of the sea, when the tide has retired, rocks and other marine substances, covered with a layer of soft, spongy substance of various forms, colours, and consistence, sometimes hanging in branches from the cliffs, which are covered by the sea, sometimes covering the surface of marine animals. This layer consists of beings which possess an organization extremely simple. Their surface is porous; those pores lead to canals which ramify through all parts of their texture; and those canals anastomosing into larger and larger trunks, lead, again, to orifices on the surface, from which there issue constant streams of water, which are at first carried in through the pores, conveyed through the canals, and next into those larger trunks. They are called *poriphera*, and they constitute the second lowest class of animals.

Inhabiting, likewise, the sea of all climes, are substances which ramify or lie in masses, but having for the most part a calcareous axis, with a skeleton composed of the carbonate of lime. Accompanying this, sometimes covering it, sometimes in the interior, there is a soft fleshy substance, which, in fact, is the body of the animal. That fleshy mass, which composes the substance of the body, is developed at particular points into sacs—digestive cavities—all over the surface. Those digestive sacs are called *polypi*; and from this character, which belongs to this class of animals, the whole class has been denominated *polypiphera*. These constitute the class of animals commonly known by the name of *zoophytes* amongst the older writers,——because they were thought to belong to the vegetable kingdom, and to be plants with highly sensitive flowers.

Now there are animals belonging to this class of various forms and of various compositions, some having a skeleton of a soft texture, as in the *alcyonium*, some horny as the *gorgonia*, some solid and calcareous as the *madrepores* and *meandrinæ*, some calcareous and jointed as the *isis*. Those belong then to this class of polypiphera having polypi. They subsist on animals. They are carnivorous—they feed upon living prey consisting of animalcules. We shall examine how they seize, digest, and throw out, the residue by the same orifices into which the prey was taken. As you observe, from the surface of this single branch (presenting a specimen of *madrepore*), there are innumerable digestive sacs all over the surface, which are so many mouths of the same individual fleshy substance. Those animals precipitate immense quantities of the carbonate of lime, particularly in tropical

seas, where they cover rocks which have been thrown up for many hundreds of miles in extent. They delight to be in water which covers rocks near the surface; and, indeed, at no very remote period, those animals were thought to extend into vast ridges of mountains, running for many hundreds of miles. This, however, was totally inconsistent with everything we now know of them, and is easily explained by what is known of volcanic action. The volcanic actions which have taken place have raised up the volcanic ridges covered with corals, which are found in all the South Seas.

In all parts of the ocean are numerous gelatinous animals, for the most part of a transparent and simple texture, such as the *medusa* and *Portuguese man-of-war*, and numerous other genera, which we shall hereafter examine. For the most part those soft gelatinous animals (which are entirely aquatic, and all of them marine) possess a property by which they excite inflammation, when they touch the surface of the skin, like nettles. The term applied to them—*acalepha*—is a Greek term expressive of *nettles*. Those animals scarcely yet possess a trace of a nervous system, and, like all the classes I have already mentioned, are all aquatic. They are seen floating through all the ocean, for the most part by the action of their own muscular power, or by air-sacs, or by cilia. They feed upon animals of extreme minuteness—for the most part the microscopic crustaceous animals, which abound in the ocean as in other waters. The waters conveyed through the pumps of London teem with crustaceous animals closely allied to crabs and lobsters, and which are extremely beautiful. Those are so abundant in the pools round London, as often to change the colour of them, and they are the chief food of the acalepha in the sea.

We have also to consider a class composed of marine animals, like most of the preceding, termed *echinoderma*, from the circumstance which you observe illustrated in the instance of the *asterias* and *echinus* before you. It is also illustrated in the common *spatangus* and *cidaris*, and many others which we shall hereafter examine. They have a sort of spiny skin. In those echinoderma we shall find the organization to have arrived at a pretty complex state. For the most part the structure of the nervous system developed, is found in the form of a circular chord, or double chord, round the alimentary canal. It is known to exist in this form in the *asterias*, *actinia*, &c.; it is known also to exist so in the last class mentioned—the *acalepha*. Where the system then has been distinctly observed in the classes of animals I have just enumerated, it appears to have a circular form.

The term "cycloneura" might serve for the whole of this group of classes, to distinguish them so far as their nervous system is known. The radiated form of the body, however, which is so apparent in many of the polypiphera and echinoderma, has caused the term "radiata" to be applied to the whole of this form. It is so used by Baron CUVIER. I shall not use the word "zoophyta," which is applied by CUVIER to this group of classes also, because that term is generally applied to a single class.

The bodies of all the higher forms of animals support myriads of beings possessing distinct vital properties—distinct organizations. They are formed in the interior of the best-protected organs of the body—in the liver, the alimentary canal, the parenchymatous substance—in the substance of the brain itself. They have generally been denominated from the position in which they are found. Such beings have been called *entozoa*. Now that term you will perceive is not expressive of their organization, from which unfortunate circumstance we find grouped together under the term "entozoa," beings possessing the most diversified structures. This is a class which has been particularly studied by the late Professor RUDOLPHI of Berlin, and the name given by him of "entozoa" is admitted by most other writers. From the simple *hydatid*, consisting of a single opening leading to a general sac, to the complex *lernæa*, all belong to this class of entozoa. Some are found even adhering to the surface of other animals. They are found adhering to the lips, to the eyes, and to other parts, of fishes.

The researches of EHRENBERG show that a group, formerly believed to belong to the class of the most minute animalcules, possess an organization extremely complex. They were characterised as rotiferous animalcules, because they have circles of vibratile cilia, which appear like revolving wheels when they are in rapid action, and by these hair-like processes they were enabled to swim. They float, attract their prey with these, and thus get their food. They possess an ali-

mentary canal passing through the body. They possess muscular fasciculi; they possess nervous ganglia, and even a cerebral or supra-œsophageal ganglion. They possess a vascular system pretty highly developed, so that they are far removed from the polygastrica, and from the classes which I have already mentioned. They are denominated *rotifera*. EHRENBERG has called them "rotatoria," but the term rotifera is the one most used. They are distinguished by their circles of cilia, sometimes single, sometimes double, which appear through the microscope-like revolving wheels.

Enclosed in multivalve shells of carbonate of lime deposited in successive layers, we find animals which possess articulated members, and have gills formed much like those of the crab and the lobster, which possess a double nervous cord, extended along the abdominal surface of the body. Those are characters which belong to the articulate classes of animals, and they have been denominated from the form of the feet *cirrhopoda*, which you see in the specimens of the *anatifa*.

The shores of the sea, the moist sands of coasts, as well as the soils of all countries, are inhabited by myriads of worms, which are found to contain a red-coloured fluid circulating in arteries and veins. These constitute the "red bloody worms" of naturalists—the "vers à sang rouge" of Baron Cuvier. The term *annelida* is the most frequently applied to them, because if you examine the earth-worms and other annelides, you will perceive they are surrounded by rings, extending from the anterior to the posterior part of the body, and occasioning this name to be applied to them.

The scolopendræ and centipedes possess an articulate body and two nervous chords, with ganglia disposed at regular distances extending along the abdominal surface of the body. They do not undergo metamorphosis. From the number of feet they possess, they have been denominated *myriapoda*, a term which has been employed now for the whole class. The myriapodes possess in their internal structure an organization closely allied to the larva of insects.

The class of insects approach most closely to them, as you will find hereafter by examining the structure which is developed internally; and when we come hereafter to examine the nervous system, we shall see the nervous system of insects changes from that of myriapodes to that of crustacea, so that the myriapoda possess a simpler structure than the other. This class of insects undergoes, for the most part, metamorphosis, from the condition of the larva or caterpillar to the chrysalis, which passes to the winged animal. They breathe from the stigmata that lead to air tubes which ramify through all parts of the body, and are called *insecta* from their divided body.

Insects possess compound eyes. There is a class of animals which is higher than the insects, yet lower than the crustacea—it is the class of the spiders or *arachnida*, and they are destitute of those organs of sensation or antennæ, which are seen extending from the first segment of the body. You observe in the scorpion that there are none of those long-jointed antennæ which you see in crustaceous animals, myriapods, and insects. The animals in this class have been denominated *arachnida* from their general resemblance to spiders.

Insects breathe atmospheric air by means of tracheæ which are most freely ramified through all parts of the body. The myriapoda breathe it also by tracheæ; the arachnida breathe it. They breathe it sometimes through those tracheæ, and sometimes by sacs, into which the air is conveyed. In the scorpion, for example, there are cavities on each side of the abdomen, into which air is conveyed, and which have a laminated internal surface.

The crustaceous animals are the spiders of the sea; they for the most part are covered externally with a solid calcareous integument, which is secreted between the epidermis and the true skin. It is composed partly of the carbonate and partly of the phosphate of lime. They possess articulated members and articulated bodies. They breathe by means of branchiæ or gills. They have compound eyes like insects, and they have two pairs of antennæ.

It is of great advantage to me to be perfectly understood in speaking rapidly of the distinct forms and structure of these classes. When I am perfectly understood, it gives me liberty to be much more rapid, and to state minute differences of orders in particular groups, which, were I not conscious that the terms I use were understood, I must be obliged, in order to be intelligible, to leave out. We cannot, for example, speak of *insecta* in the sense of Linnæus, who comprehended under that term any animal that possessed no vertebræ, and had articulated members. Therefore the classes myriapoda, insecta, arachnida, and so on, in the system of Linnæus, were all insects. It is impossible, however, to use language of that kind now, and to be at all minute in our descriptions.

Now when we examine the nervous system of the lowest classes of animals,

we find it diffused in globules throughout the body. These globules compose the nervous system of all animals. In the lower genera, all systems of the body are blended down, but in the higher radiated animals you begin to find circular filaments developed. In the crustacea, the nervous system is disposed in the form of two abdominal chords. Now this form can be traced from the crustacea down to the entozoa, and we shall hereafter have occasion to trace this system down to its simplest form in the vertebrated embryo, where it appears to be like a simple filament,—the first streak which is seen on the ovum in the highest form of animals, and which we know to be the rudiments of this system. But it assumes a more perfect form as it ascends and develops the brain. Now taking this nervous system to give us the rudiments of all classification, if you take the Greek term *diplo-neura*, that would express the whole of the articulated classes. They are most frequently, however, denominated *articulata*; therefore I may employ, indiscriminately, those terms. The one to my mind is the term which refers to the all-ruling system of their economy.

Frequently cast ashore upon the rocks,—driven ashore by the agitated states of the sea,—we find animals possessing a complex internal structure, and surrounded externally with a soft transparent homogeneous tunic. Within that external tunic we find a heart developed of one cavity. We find a nervous system, a respiratory system in the form of branchiæ or gills; we find a stomach, a liver, and other glands, and organs of generation. They possess a structure closely allied to the animals inhabiting bivalve shells. They are denominated, from their external tunic, *tunicata*. The inhabitants of bivalve shells form the class denominated *conchiphera*. The inhabitants of univalve shells have for the most part received the name of *gasteropoda*, because you will observe that the snails, for example, creep on a muscular disk, which extends over the lower surface of their belly.

We observe floating through the sea, particularly when calm, myriads of very delicate and transparent animals belonging to this molluscous division of the kingdom, which possess a complex internal structure. They breathe by means of gills, which for the most part are disposed on the external surface of the body. They swim to and fro in the sea; they do not creep, but swim by extended membranes, such as you observe here—the clio borealis.

In this animal there are two membranes on which the gills are disposed, and by the motion of which they swim to and fro in the sea. They possess an internal structure, and are closely allied in many respects to the last class. They constitute the class denominated *Pteropoda*, from the wing-shaped membranes by which they swim. The highest class of all the invertebrated division of the animal kingdom are the Cephalopoda.

The next class of animals to that of the *fishes* is denominated the *Cephalopoda*, a name which you observe they have received from the circumstance of the feet surrounding the head. Those extremities surrounding the head are the feet on which the cephalopoda creep.

When you come to examine into the nervous system of all these classes, from the tunicata to the cephalopoda, you will find that that system has its centre in the form of ganglia around the entrance of the alimentary canal, and frequently forming a chain of ganglia around the œsophagus. They might be denominated, to connect them together, *cyclo-gangliata*.

The study of all classes of animals is interesting, but, perhaps, to the medical student, who is at all times more interested in this part of the course which treats of structure and functions than in that which treats of the history—the zoology—all parts are interesting. But, probably, these parts are the most interesting which come nearest to the human form; and he is particularly interested in the cephalopodes, where he is losing the invertebrate form of the lowest, and coming to that vertebrated form of the group to which man belongs. He looks with particular interest to the internal hard parts of the cephalopodes. There he finds the vertebral column not divided transversely into different portions, but the vertebræ spread out, and not so connected as to form a tube around the great nervous system, which is a form that characterises the true vertebrata.

The first then, Gentleman, of the true vertebrated animals, is the class of fishes, which by their aquatic life are like tadpoles, which are never metamorphosed. Their arms and legs are in the form of fins, intended for their aquatic life. Their

breathing organs are in the form of gills. They possess, like the true tadpoles, one ventricle and one auricle. This class of fishes is called *Pisces*.

There is a class of animals which are frequently placed along with the reptiles, and which comprehends the various forms of frogs, toads, salamanders, and tritons, which have not three cavities of the heart like reptiles, but only two cavities, like fishes, an auricle and a ventricle. They are amphibious animals. They breathe at first by means of gills. At first they assume the form of fishes, so that they are like fishes that are destined to be metamorphosed. The term *amphibia*, applied to them by LATREILLE, has been adopted, and is now used by most who speak of them, because they contain a group which pass through two conditions of life. You cannot place them among other land animals, or among fishes. For the most part they approach more nearly to fishes. To us, as anatomists, they are deeply interesting. We shall here see beings changing in all their internal machinery from their aquatic condition to beings which live and breathe in the atmosphere — a metamorphosis which affects their osseous system, their vascular system, their nervous system, even their digestive system, and, indeed, their whole structure.

The next class, Gentlemen, in the cold-blooded animals is the reptiles, for when we ascend beyond this, we come to the hot-blooded, which comprehends man himself. But in the class which comprehends all the different kinds of serpents, crocodiles, lizards, and tortoises, we find the heart to consist of three cavities, two auricles, and a ventricle. The reptiles breath by means of lungs at all periods of their life. They do not undergo the metamorphosis which I have spoken of in the amphibia. They are oviparous, cold-blooded vertebral animals, with three cavities of the heart—the *Reptilia*.

The first class to be named of the hot-blooded animals is that of birds—a class which may be characterised by its oviparous nature—the heart consisting of four cavities, two auricles, and two ventricles. They breathe by means of lungs—they are covered with feathers. Their anterior extremities are organised for an aerial life. They are denominated *Aves*.

The highest class of animals is that that which comprehends man, and all animals which, like man, possess a viviparous mode of generation. These animals have a heart consisting of four cavities—they have hot and red blood. They differ in their exterior form of covering from the former, which is not in the form of feathers, but of hair. Their most essential character, however, is that of their being viviparous, and suckling their young by teats, and they are thence called *Mammalia*.

Now these five classes of vertebrated animals will engage the greater part of our attention during the course, because the consideration of their organs is by far the most interesting, but still we should not neglect any of the forms met with in the lower classes. When we consider abstractedly the five classes enumerated, we find them singularly characterised by the condition of their nervous system. It is no longer disposed either in the form of cords running round the stomach or below the intestinal canal, nor as a chain of ganglia around the œsophagus, but it is contained in a jointed earthy tube which is remarkable for its solidity. The skeletons of animals are divided where they are hard—where they are soft, they need no division. Hence this hard tube must be divided into vertebræ, and this contained spino-cerebral axis constitutes the central body of the nervous system. It consists of a brain and spinal marrow—the spinal marrow develops the brain—the *spini-cerebrata*: or the term, perhaps, more familiar to you, if you prefer the case to the substance contained in the case—the *vertebrata*.

Now this is all the time I can spare to this branch of the subject, which is purely zoological; but considering the objects before you, and the terms by which I am to designate them, it was right to devote a lecture to their explanation, as it will now be easier to follow me in treating my various subjects anatomically, which I shall proceed to do to-morrow.

[This lecture was illustrated by select zoological specimens of all the classes of animals, disposed in methodical order on the tables.]

The following is a connected view of the classification adopted in the foregoing lecture, the order of description being reversed:—

SPINI-CEREBRATA, *or* VERTEBRATA.

1. Mammalia.
2. Aves.
3. Reptilia.
4. Amphibia.
5. Pisces.

CYCLO-GANGLIATA, *vel* MOLLUSCA.

6. Cephalopoda.
7. Pteropoda.
8. Gasteropoda.
9. Conchiphera.
10. Tunicata.

DIPLO-NEURA, *vel* ARTICULATA.

11. Crustacea.
12. Arachnida.
13. Insecta.
14. Myriapoda.
15. Annelida.
16. Cirrhopoda.
17. Rotifera.
18. Entozoa.

CYCLO-NEURA, *vel* RADIATA.

19. Echinoderma.
20. Acalepha.
21. Polypiphera.
22. Poriphera.
23. Polygastrica.

CLINICAL LECTURES

ON THE

STRUCTURE AND DISEASES

OF THE

BLADDER, PROSTATE GLAND, AND URETHRA;

ON HIS

DISCOVERY OF THE MUSCULI RHOMBOIDEI URETHRÆ;

AND ON CATHETERISM;

*Delivered at the Westminster Hospital,**

BY MR. GUTHRIE.

GENTLEMEN,—The continual calls on the bladder, from the beginning to the end of life, and the double function which the urethra has to perform, tend constantly to their derangement. These morbid tendencies must sooner or later develop themselves according to the ordinary course of nature, and are often caused to germinate at an early period, by vicious practices.

The shape of the bladder has been differently described by authors. In the healthy state this viscus is capable of great extension and corresponding contraction; it has a structure apparently membranous, and easily separable into layers. When the peritoneal covering is removed, the fibres of the external muscular coat are seen to run in a longitudinal direction, and admit readily of separation from one another, and from the muscular layer beneath, as the bladder is progressively dilated. The fibres of the inner muscular coat run in a spiral and transverse direction, and are particularly well seen from the interior of the bladder, when in a state of hypertrophy. When the bladder is moderately distended *in situ*, it becomes pyriform, the superior part is called its summit, the anterior and posterior surfaces are more or less flat, the sides are rounded, while the lowest part, which is deep, round, and capacious, is called its base or *bas-fond*. The opening of the meatus is the commencement of the neck of the bladder; it is situated almost in the middle of the anterior phase of the organ, and opens abruptly into the area. This orifice, when viewed from behind, looks like a perpendicular slit. Behind and below this point is the *trigone* of the French, which is whiter and of a denser and more elastic structure than any other part. The apex of this triangle is formed by a slight projection at the meatus, called its *uvula*, and the base is marked by a strong whitish band, which passes from side to side. The ureters open within the two extremities of this band, and from these, two other prominent bands incline towards each other, and terminate by being inserted behind the *uvula*. The orifices of the ureters are surrounded by the peculiar dense and elastic substance which lies beneath the mucous lining and muscular coats of the bladder. This *superadded tunic* commences at the base of the trigone, converges to its apex, forms, in a great measure, the mouth of the bladder, and appears to be continuous and identical with the elastic membrane of the ureter. The orifice of each ureter is small, and cannot be enlarged without great difficulty, owing to the unyielding nature of this fibrous texture. If the ureter itself be enlarged by long retention of urine, the orifice remains of its usual size; but if a stone descend from the kidney, the *vis a tergo* of the incumbent urine enables it to pass through, but not without acute pain. Instances, however, are on record, where the stone has been of such a size as to become incarcerated in the orifice of the ureter, and to produce death by the irritation it excited. The ureters have no valves at their orifices to prevent the reflux of urine. The ureter opens on the peculiar dense structure I have described, in order that the orifice may be constantly patulous; and the ob-

* Mr. GUTHRIE has recently delivered a series of lectures on the anatomy and pathology of the urinary organs to the surgical pupils of this institution. The grain divested of the chaff we here present to our readers.

liquity of the passage through the coats cause it to be pressed upon and obliterated by the systole of the bladder or its contents, and thus prevents the further flow of urine into it. The ureter, and even the pelvis of the kidney, may become dilated by an accumulation of fluid, and to such a degree as to destroy the structure of the kidney.* Nature can accommodate herself for several days, and sometimes for weeks, to a total suppression of the secretion of urine; and for a very long time to a partial suppression. When retention of urine takes place, the bladder will be distended, but the secretion of urine will be gradually diminished if no relief be given, it being a part of the economy of nature to protect the bladder and urethra, which are more open to injury than the system at large.

The triangular space is very vascular and highly sensible, compared with other parts of the bladder. It gives rise to the desire of expelling the urine, and is the chief cause of suffering in cases of stone. The idea that a bougie touches this part on entering the bladder, and thus gives rise to the desire to expel urine, which is usually felt, is erroneous; for when a healthy bladder contains a moderate quantity of fluid, a bougie on its introduction can only touch the apex of this space, and observation has taught me that this desire takes place as soon as the instrument has reached the prostatic part of the urethra, and, consequently, before its entrance into the bladder. It is worth notice, that the same nerves, viz. branches from the inferior mesenteric and hypogastric plexuses, and from the third and fourth sacral nerves, supply this part and the trigone.

The bladder in the healthy state, when moderately distended, enlarges downwards towards the rectum, and the triangular space descends, placing all of it but the apex out of the reach of any but a curved bougie. This descent can only take place in a healthy bladder, for when diseased, this viscus loses in a great measure its distensibility. Except in health then, the trigone does not lie on the rectum, and the bladder cannot be punctured through that gut. This operation was founded on the supposed fact, that the triangular space was closely adherent to the rectum; but it has been shown that the peritoneum, instead of being reflected from the bladder to the rectum at the base of this triangle, not unfrequently passes on, as far as the prostate gland, so that a puncture would reach the general cavity of the peritoneum. Behind the base of the trigone, the coats of the bladder are usually thin, but the transverse bands of muscular fibres are strongly developed, and are sometimes arranged in an oval direction. This thinness of the coats, and the direction of the muscular fibres, often admit of a hollow being formed, in which a stone may lie, and remain undiscovered. I have known as many as *fifty* stones to remain in such a cavity. A hollow of this kind is a part of the general cavity of the bladder, and is very different from the pouches which are frequently found, and which are hernial protrusions of the mucous coat through the interstices of the muscular tunics.

The longitudinal muscular coat of the bladder is composed of fibres easily separable. If this coat be dissected off by making an incision of the anterior phase from the prostate up to the summit, it will be seen that it passes over the prostate and is not confined to the bladder only. As the fibres descend from the summit, they sweep by the ureters, and, becoming compact, in many cases, are partially reflected upon the ureters, securing them in their insertions. The remainder lie on the sides of the prostate, being partly inserted into it and its capsule, and partly into a double tendon on the fore part of the prostate, and having a ramus proceeding from each side. These rami are in connexion at their upper part with the pelvic fascia, and are known as the *inferior ligaments of the bladder*, and are inserted into the pubes near its symphisis. If their attachment with the pelvic fascia descending from the pubes be dissected, some fibres will be seen proceeding from them a little anterior to the prostate, and lying in a radiated form on the fore part and sides of that gland. These are the fibres which have been described as the *compressores prostatæ* of WINSLOW. The longitudinal fibres of the bladder cannot embrace the back part of the prostate, on account of the vesiculæ seminales; they are therefore inserted into a tendinous line attached to the posterior part of the prostate. They do not, however, invariably terminate in this part, but proceed in the shape of a strong band into the substance of the prostate, and are evidently inserted, with the ejaculatory ducts, which they appear to surround, into the verumontanum.

* A remarkable example of the absorption of the substance of the kidney was recently shown in this hospital, in dissection, by Mr. JENKINS and Mr. EDWARDS, where, in a dropsy of the pelvis of either organ, the structure was reduced to a mere coriaceous bag. This preparation is visible in the museum of the *Ophthalmic Hospital.—Rep.*

The strong transverse and spiral chords, observable in the inner layer of the muscular coat, you can see from the inside, without any preparation, except at the neck of the bladder, where they are scarcely, if at all, perceptible. I and my pupils have never been able to discover any circular fibres at the neck of the bladder; a few transverse fibres only are discoverable, crossing directly over the opening from the bladder into the urethra. I am of opinion that the portion of the bladder surrounding the aperture of the urethra possesses but little muscular contractility, whilst it is endowed with considerable elasticity. When the detrusor urinæ contracts, its tendons, inserted into the pubes and into the prostate, become the fixed points, the urine is forced against the orifice of the urethra, which yields, by its elasticity, and returns to its former state when the pressure is removed. I am aware that in paralysis of the bladder, the urine may generally be made to flow by pressing on the abdomen. This cannot be done in a healthy person, and would seem to imply that a muscular power was the cause of the urine being retained; but on the other hand, this fluid is retained, and collected in considerable quantities, in some paralytic cases, without escaping even in the erect position, a fact which implies the existence of an elastic power at the cervix of the bladder. I do not know of any anatomist who by his dissections has satisfactorily shown the existence of a *sphincter vesicæ*. I am willing however to suppose that this part may be both muscular and elastic. Whether this retentive power be entirely muscular or entirely elastic, or combined of both, is a matter of little consequence; but the fact of there being elastic structure at the part is of importance, because it enables us to account for the existence of certain diseases.

The term "neck of the bladder" has several meanings, according to the views of different anatomists; but I understand the term as including the small part surrounding the opening into the urethra, and which is therefore a narrow ring, not broader than the thickness of the bladder itself. It is that portion on which the uvula is situated, the urethra being before, and the bladder behind it. This part may lose its natural elasticity from morbid causes; it may become firm and contracted, resembling a stricture in the anterior part of the urethra; urethral strictures however do not take place within two inches of the cervix. This is the opinion of the old surgeons, and all derangements beyond this ultimate point of stricture have been ascribed to derangements of the prostate gland. This dictum is a great error, for the difficulties which commonly occur in making water, in old as well as young people, is oftener due to disease of the neck of the bladder, unconnected with the prostate, than to disease of that gland.

The prostate gland is a substance of tolerably firm consistence, and of a whitish-gray colour, placed in immediate connexion with the orifice of the bladder, and nearly surrounding the first portion of the urethra. It is about *fifteen* lines in length, and is like a flattened chesnut in shape, the base being turned towards the bladder, and the apex towards the urethra. When divided vertically, the greatest portion is seen to be below the urethra, though, in this respect, there are variations. When the upper and smaller portion is divided, and the neck of the bladder laid open, a white raphe is seen to run from the uvula vesicæ in the middle of the floor of the urethra; it passes through an oblong body nearer to the apex of the prostate than to the bladder, called the *verumontanum*, and is finally lost in the bulbous portion of the urethra. It appears to strengthen these parts. The ejaculatory ducts open on each side of this little eminence. On the top of this is a lacuna called the *sinus pocularis*, large enough to admit the end of a small bougie, but over which larger instruments pass readily. Even to a small bougie, however, it affords no serious impediment. On the floor of the urethra, by the side of this elevation, the ducts of the prostate open; they are generally about *eight* in number, and arranged in a crescentic form. They are connected with follicular glands in the substance of the prostate. The widest part of this last body is from side to side, being about *eighteen lines*.

The prostate in the fœtus is composed of two parts, each consisting of two lobes. Between the fourth and fifth month of utero-gestation, the two internal lobes unite, and the gland then consists of three parts, and these again, between the sixth and eighth month, become one substance. The base of the gland is notched in the middle, and at the under part, which, with the passage of the urethra through it, gave rise to its division into two lobes. A little below, where the notch terminates, the ejaculatory ducts enter, by perforating the gland. The portion of gland between the bladder and these ducts, forms a bridge between the two lateral portions, and takes on different forms in different subjects. It sometimes assumes the shape of a nipple, and for that reason was called the *third lobe* by Sir Everard Home. It was well known to Mr. Hunter, and to other anatomists.

The prostate is applied above, and to the sides of the neck of the bladder, but is generally wanting at the under part, unless what is usually called the *third lobe* be unusually large. The under part of the neck of the bladder, then, is not always surrounded by the prostate, and the *uvula* or *crete vesicale* of the French is not necessarily connected with its third lobe, or any other part of it. On the forepart and sides, the longitudinal layer of vesical fibres passes over the prostate; on the under part they generally stop short of it, but sometimes perforate its inferior surface. The middle muscular layer and the elastic fibrous structure appear to be attached to it, whilst the mucous coat is merely connected through the medium of cellular tissue.

Two corollaries are deducible from the foregoing statements:—

1. That the elastic structure, at the neck of the bladder, may be diseased, without any connexion with the prostate gland.

2nd. The prostate gland may be diseased without any connexion with this elastic structure. (Mr. Guthrie here exhibited several preparations; one, in particular, was an instance of disease of the elastic membrane at the neck of the bladder, without any affection of the prostate. The patient in this case passed his urine with great difficulty, and, ultimately, after much suffering, died of the disease. Another preparation afforded an example of diseased prostate, quite independent of any disorder of the elastic substance.)

When there is a third lobe of the prostate, and that is diseased, and projects into the bladder, the elastic structure usually partakes of the evil, and forms a hard firm bank. This complicated mischief is much less tractable than the simple affections before quoted.

In the curable or first stage, when there is only a defect of elasticity, it gives rise to stricture at the orifice of the bladder, curable by common means, if properly applied. In its second stage, when the *bar* is formed, and becomes rigid, a small bougie rests against it, and if soft, bends; if it be a solid instrument, it passes into one of the hollows on each side of the white raphe, which are deepened by the elevation of the *uvula vesicæ*, and it catches in the valves at the entrance. In this case a No. 12 catheter should be used, with a round point.

When the disease reaches its third stage, it gives rise to considerable straining and difficulty in making water, which cannot always be effected. When the elastic cervix does not yield, in consequence of disease, to the natural pressure of the bladder, the muscular fibres of that viscus are called upon to act with increased vigour, the mucous membrane becomes distended with urine, expands, and is protruded through the interstices of the muscular coats. An extra-vesical pouch is thus formed, and goes on increasing, if the cause continue, until it attains considerable magnitude. Into these pouches stones have been known to pass and become fixed, where they may be sometimes touched with the beak of the sound. These sacs become reservoirs of urine. In order to empty them, the patient should alter his position when the catheter is introduced. These chambers are seldom found in the anterior part of the bladder.

There is a symptom which may be confounded with those indicating disease of the neck of the bladder, but which is the consequence of no particular malady. It often happens, that at about fifty years of age, the urine passes with less force and rapidity than formerly. This is due to a diminution of elasticity at the neck of the bladder. If the person be attentive to himself, he finds that he makes water very well on rising in the morning; and that during the time of dressing, he makes it once or twice in larger quantity. This arises from the urine not being usually secreted to any extent during sleep, whilst the kidneys become more active on waking, and after the first locomotive efforts. This is not a sign of disease. The urine has no ammoniacal or offensive odour, which would be the case if this irregularity arose from the existence of pouches.

Another symptom has presented itself to my observation, and which I cannot account for; that is, an occasional blow received on the end of the catheter, immediately after the evacuation of the urine. This impulse is very different from the particular sensation imparted by the contact of a sound with a stone. It has exceedingly puzzled a number of experienced surgeons who witnessed it. In one or two cases these blows have been repeated irregularly, which has induced me to call them the *fluttering blows of the bladder*. These phenomena occur only when the last drops of urine are flowing. My opinion, derived from observation and dissection, is, that these fluttering strokes of the bladder on the catheter are caused by the descent of the pouches containing urine, and which are impelled against the instrument by the muscular efforts of the bladder in expelling the last drops of urine.* There is

* This phenomenon is described by Dr. Heurteloup in his work on lithotripsy, and called by him the *intermittent contractions* of the bladder. The effect when that viscus is filled with tepid water, resembles an irregular arterial action, producing a corresponding jet from the catheter.—*Rep.*

reason to suppose that these blows have in some instances led to an erroneous conviction of the existence of stone, and to needless operations.

The prostate gland is bounded by some large veins proceeding from the penis, and passing between the tendons of the bladder. These, and the veins of the bladder, have especial reference to operations for stone, and I shall make mention of them on a future occasion.

It is usually said, that a female has no prostate, because she has no vesiculæ seminales; but I must aver, that there is a substance of the same shape, and nearly of the same structure, surrounding the commencement of the female urethra. It is of the size of the prostate in a boy of twelve years old, and resembles, in external appearance, the same body in the male. In the *female prostate* there are no ducts, and, consequently, none of the glandular structure, which gives the additional bulk to the male. The fibres of the bladder have the same arrangement in the female as in the male; and I am induced, therefore, to believe, that the prostate in the male has three offices. 1. To give the bladder and urethra a fixed point on which to act for the expulsion of urine; 2. To secrete a peculiar fluid; 3. To receive secretions from other parts.

Anterior to the prostate, the urethra is termed membranous, for about an inch, and passes under the pubes, and through the triangular ligaments of Camper. The bulb of the urethra lies in front, and in connexion with this ligament, and the *membranous* portion behind it. It was called *membranous*, from the ease with which the canal might be isolated from its investments, as well as from the thinness of its proper coats when thus deprived of its usual coverings. This part has always been known to be surrounded by muscular fibres, and the older anatomists conjectured that they were capable of acting as a sphincter to the bladder, although situated thus far anterior to it.

Mr. Wilson gave a particular description of two muscles situated about this part. They were acknowledged generally, but no anatomist except himself has given a precise description of them. Mr. Wilson stated that they were closely connected with the levator ani of each side, and very easily found out. In having these parts dissected for demonstration at my lectures, a satisfactory development of these muscles never could be effected. The fact is, Mr. Wilson only described half a muscle, and he fell into this error by dissecting from a side view only. I shall now point out to you on these preparations the results of my dissection. Here is the membranous part of the urethra, surrounded by a perfectly defined muscle. On the upper part there is a median line of tendon, which runs backwards, to be inserted into the fascia covering the upper surface of the prostate, and, again, forwards, on the urethra, through the triangular ligament, to be inserted in front of it, near the union of the corpora cavernosa. On the under part a similar tendinous line is to be observed, which is attached behind to the fascia underneath the apex of the prostate, and before to the central tendinous point in the perineum. Each muscle on its upper surface is covered by fascia descending from the pubes, which adheres to it. From the median tendinous line in the upper part of the urethra, the fibres pass outwards on each side, converging towards the centre, where they form *a leg* of muscular fibres. On the under surface the same thing takes place, and a leg on each side being thus formed by the superior and inferior fibres running from each half of the urethra, they pass transversely across the perineum, to be inserted into the descending ramus of the pubis. The urethra is thus enclosed between two muscular rhomboids. These muscles are included between the two layers of the deep perineal fascia. Cowper's gland on each side lies under or posterior to the muscle, and seems to be enveloped by it. The inner layer of fascia, passing on the inside of the muscle, reaches the inner edge of the levator ani, round which it turns to invest the urethra and prostate. Taken as a single muscle, it has two origins and five insertions,—or six, if the superior attachment of Mr. Wilson be considered double. When it acts, which it must do, from its origins from the rami of the pubes, it can compress the urethra so as to close it as completely as a sphincter, while, from their attachments, they must also draw the urethra towards the pubes.

On passing through the triangular ligament, the urethra obtains the name of the bulbous portion, in consequence of its contiguity with the bulb of the corpus spongiosum. In penetrating this triangular fascia, the urethra derives from it a layer of fibrous tissue, which surrounds and supports it. The bulb is applied to this, on the under but not on the upper part, and is retained and fixed in its situation by the *acceleratores urinæ*. These muscles are not described with the accuracy they deserve. They arise on each side, sometimes by a small-pointed triangular tendon, from each of the rami of the os pubis, at that point where they are nearest each other. When this tendon does not exist, they arise from the triangu-

lar ligament by fibres, which pass on with it to the same part of the pubes, although they are firmly implanted also around the bulb. The urethra on passing through the triangular ligament ascends, and during this ascent on the fore-part of this ligament, for half an inch, it is firmly attached to it by additional ligamentous substance. The acceleratores muscles passing from the sides above the urethra, adhere strongly around this part, from which a white line extends upwards for about two inches, being the centre of a flat thin tendon, formed by the two muscles, one surface of which tendon is applied to the urethra, and the other lies between the crura penis before their junction, and afterwards beneath the corpora cavernosa, forming the under part of the sulcus on which the bulbous portion of the urethra is received. From the origin of the muscles on each side of the bulb, the lowest fibres pass downwards to cover its inferior part; those arising higher up pass across, and those still higher ascend, diverging from their point of origin; the fibres of each side are seen meeting in a white central line, lying on the surface of the bulb, passing downwards to form the point of insertion in the perineum, and running upwards on the urethra into a point whence the fibres on each side diverge, and embrace the ligamentous covering of the corpora cavernosa, till they reach their ultimate attachment. This muscle is not only a compressor of the bulb, but of the urethra immediately before it, which it surrounds, the corpus spongiosum being interposed.

The passage of the urethra from the opening in the triangular ligament, is a gradual ascent to the point where the penis begins to be pendulous, when the urethra suddenly descends with it, and the curve separating the ascending from the pendulous part, is formed by the attachment of the under part of the pubis, and not, as has been supposed, by the common suspensory ligament of the penis. If these points of attachment are attended to, the passage of instruments into the bladder, if the parts be healthy, is a very simple operation. They are, moreover, guides, showing the respective places at which the point of the instrument may have arrived. The length of the urethra depends chiefly on the pendulous part, but not entirely; for the age and stature of a person often make an essential difference in those parts which are most fixed. I consider any computation of the length of the urethra as useless, except as a matter of curiosity; the ordinary instruments are therefore, in point of length, of universal application; but when the prostate is enlarged, the urethra adjacent admits of a certain degree of elongation, and requires a catheter longer, and larger in the curve. In the living subject, the *prostate* portion is 15 lines, and the *membrane* 12 lines. The length of the spongy portion of the urethra is always uncertain, and can be of no consequence. The orifice of the urethra, when in the normal state, is always vertical, and closed, the sides being applied to each other.

In addition to the excretory ducts to be found in the prostatic portion, two from Cowper's glands open in the bulbous portion. These glands are two small roundish bodies lying close behind the bulb, and separated from it by the anterior layer of the deep perineal fascia. The ducts pass upwards and forwards for about an inch, and open on the under surface of the urethra by very small orifices. They are evidently sexual glands,* *and are to be found in the female* in a similar situation with regard to the fascia as in the male. Here is a preparation showing the excretory ducts opening into the vagina. These were known to the older anatomists. There are many other openings from secreting surfaces in the spongy portion of the urethra. These appear generally on the median line on the under surface, and are called *lacunæ*, although some large ones are to be found on the upper surface. One larger than the rest is called the *lacuna magna*. It is generally about an inch and a half from the orifice of the urethra. The orifices of these lacunæ are turned forwards, and may catch the point of a small bougie. When this accident occurs, the bougie must be withdrawn a little, and then impelled cautiously.

The diameter of the urethra is so uncertain, that it is scarcely worth speculation, especially as the passage of instruments is regulated by the size of the meatus externus. Taking a well-formed urethra, the orifice will be found to be the smallest part, with relation to every portion of the passage. I know but of one exception, and that is in people whose orifice is rather large, and in whom the narrowest part is situated in sight, about a quarter of an inch within the meatus. This is a natural formation; but sometimes this part is the seat of stricture, in which case it should be divided with a small blunt-pointed knife. Very few urethras will, however, admit a sound larger than from 12 to 16. The orifice of the urethra is the part least capable of distension, whilst every other part may be dilated to twice its natural size. The orifice scarcely yields without tearing, its structure being

* Vide Cowper's *Ενχρασια*.

analogous to that which forms the edge of the eyelids. The mouth of the urethra is often restricted in size by a sort of valve, or hymen, which passes across the lower part. It may also be unnaturally small, though well formed. In such cases it may be divided with a small, sharp, and strong iris knife.* This enlargement is necessary for the passage of large bougies, which are indispensable in the radical cure of stricture. M. Amussat observes, that after passing the bend caused by the pendulous part of the urethra, there are two obstacles to the introduction of the catheter. The first is a fold of membrane passing from the urethra to the pendulous portion of the bulb; the other is, the edge of the triangular ligament which passes under the urethra. These are avoided by keeping the penis on the stretch (after the handle of the instrument is placed in a vertical direction) until it is lowered, and by bearing the point against the upper surface of the passage.

If a *straight* instrument is to be passed into the bladder, the horizontal position of the pubes is to be remembered, and the attachment of the urethra to it, through the triangular ligament, to the extent of its bulbous portion. By raising and gently stretching the penis, the urethra may be brought into a straight, although an inclined line, commencing at the orifice, but not going on to the bladdar. On the contrary, it passes through the membranous part of the urethra only, and terminates at that part which is embraced by the transverse portion of the prostate, against which it is *sure to strike*. In a healthy urethra, by withdrawing the point a little, by letting the penis loose, and by a dexterous lowering of the handle, the attachment of the upper surface of the urethra to the triangular ligament being thus made the fulcrum, the point is tilted over the anterior edge of the prostate, and then passes readily into the bladder. It is sometimes necessary to introduce a finger into the rectum to effect this object.† When a straight sound is passed, the patient should be laid on his back, with his legs drawn up, and his body a little bent forwards, to favour the formation of an inclined plane of the urethra. The rectum should be previously emptied, that the prostatic portion of the urethra may not be elevated.*

When the patient has an enlarged prostate, and the urethra behind the triangular ligament is lengthened, as well as altered in its direction, the catheter should have a different shape from the common one. It ought to be *fourteen* inches long, a No. 12 in size, quite round at the point, with small round holes at the sides, and with a large curve.

* Baron Heurteloup has been in the habit of making such an incision in small meatuses, previous to the introduction of his lithotriptic instruments; he calls it "*la moucheture.*"—*Rep.*

† This is a very clumsy expedient, and never resorted to by lithotritists.—*Rep.*

The Hand, its Mechanism and Vital Endowments as evincing Design. By Sir Charles Bell, K.G.H., F.R.S. L. & E. Aldi Discip. Anglus. London. Pickering. 1833. 8vo.

The trustees of the late Earl of Bridgewater entrusted to Sir Charles Bell the execution of one share of a great work which was named in the Earl's will. Eight thousand pounds, and the dividends accruing thereon, were directed by that nobleman to be paid to some person or persons who should be selected by the said trustees, to write, print, and publish one thousand copies of a work "On the Power, Wisdom, and Goodness of God, as manifested in the Creation; illustrating such work by all reasonable arguments, as, for instance, the variety and formation of God's Creatures in the Animal, Vegetable, and Mineral Kingdoms; the effect of Digestion, and thereby of Conversion; the construction of the Hand of Man, and an infinite variety of other arguments; as also by Discoveries Ancient and Modern, in Arts, Sciences, and the whole extent of Literature."

The "admirable Crichton" being dead, the trustees of course considered such a work as this far too stupendous for the execution of any one individual. They therefore chose eight men of renown, and apportioned to each a branch of the proposed argument. And as eleven out of every twelve periodicals in a few years pass into oblivion and are no more seen, we think proper to record in the pages of the immutable Lancet, the names of the divisions and the appointments which the trustees have made in completion of their duty, in order that the details may never

* Quite needless we think.—*Rep*

perish, even if the works themselves decay; for the circumstances are curious and interesting. The books, then, already published, or to be published, and their authors, are these:—

1. On the power, wisdom, and goodness of God, as manifested in the adaptation of external nature to the moral and intellectual condition of man. The Rev. THOMAS CHALMERS, D.D.

2. On the adaptation of external nature to the physical condition of man. JOHN KIDD, M.D., F.R.S.

3. Astronomy and general physics, considered with reference to natural theology. The Rev. WILLIAM WHEWELL, M. A., F.R.S.

4. The hand, its mechanism and vital endowments, as evincing design. Sir CHARLES BELL, F.R.S.

5. On animal and vegetable physiology. PETER MARK ROGET, M.D., F.R.S.

6. On geology and mineralogy. The Rev. W. BUCKLAND, D.D., F.R.S.

7. On the history, habits, and instinct, of animals. The Rev. WM. KIRBY, M.A., F.R.S.

8. On Chemistry, meteorology, and the function of digestion. WILLIAM PROUT, M.D., F.R.S.

Undoubtedly the choice in the majority of these instances was good; so, also, under the limits assigned to the trustees, was the arrangement of the subjects. And as many of them have a close relationship to medicine in its most enlarged sense, we shall probably give an outline of the argument of each such volume as it appears. We proceed now to notice the treatise on the mechanism and endowments of the hand.

Sir Charles Bell first declares, that the reflections contained in his work, were not suggested by the Bridgewater testament, but occurred to him long since, when engaged in the study of other objects. In fact, the entire matter of the treatise was included in the lectures delivered by him at the College in Lincoln's Inn Fields, two years ago. How Proteus-like is the character of modern literature! Variety of form and novelty of appearance were not more the essentials of the defunct sea-god than they are of the living author, —from the constructer of tales to the first of philosophers. Like as in the monopolilogues of Matthews—Matthews is obscured in each change; so in many books is the materiel disguised. Yet both Matthews and the materiel are the same each time. Not always, however, is it in books that the basis is worthy of a superstructure. The present is an instance in which we recognise old features beneath a new mask, with gratification.

The object of Sir Charles is to prove *design* in the formation of the hand, (A needless task. Who doubts design?) not a *particular* design, directed to a *partial* end, but a design which forms part of a grand scheme, planned by a superhuman mind. Two properties in the hand challenge our observation; the beauty of its mechanism and its exquisite sensibility —properties which are accurately adapted to each other, and necessary to the efficiency of the member. The author traces the zoological analogies of these properties with ingenuity. This is the skeleton of his argument:—

"I shall take up the subject comparatively, and exhibit a view of the bones of the arm, descending from the human hand to the fin of the fish. I shall in the next place review the actions of the muscles of the arm and hand; then proceeding to the vital properties, I shall advance to the subject of sensibility, leading to that of touch; afterwards I shall show the necessity of combining the muscular action with the exercise of the senses, and especially with that of touch, to constitute in the hand what has been called the geometrical sense.

"I shall describe the organ of touch, the cuticle and skin, and arrange the nerves of the hand according to their functions; I shall then inquire into the correspondence between the capacities and endowments of the mind in comparison with the external organs, and more especially with the properties of the hand; and conclude by showing, that animals have been created with reference to the globe they inhabit; that all their endowments and various organization bear a relation to their state of existence, and to the elements around them; that there is a plan universal, extending through all animated nature, and which has prevailed in the earliest condition of the world; and, finally, that in the most minute or most comprehensive study of those

things we everywhere see prospective design.

To give a comprehensive analysis of the whole Essay would require a larger space than we can conveniently spare. We, therefore, merely attempt to impart some general idea of the subject, by extracting a few of the more interesting paragraphs.

"We ought to define the hand as belonging exclusively to man—corresponding in sensibility and motion with that ingenuity which converts the being who is weakest in natural defence, to be the ruler over animate and inanimate nature.

"If we describe the hand as that extremity which has the thumb and fingers opposed to each other, so as to form an instrument of prehension, we extend it to the quadrumania or monkeys. But the possession of four hands by animals of that class, implies that we include the posterior as well as the anterior extremities. Now the anterior extremity of the monkey is as much a foot as the posterior extremity is a hand; both are calculated for their mode of progression, climbing, and leaping from the branches of trees, just as the tail in some species is converted into a hand, and is as useful an instrument of suspension as any of the four extremities.

"The armed extremities of a variety of animals give them great advantages; but if man possessed any similar provisions, he would forfeit his sovereignty over all. As Galen long since observed, 'Did man possess the natural armour of the brutes, he would no longer work as an artificer, nor protect himself with a breastplate, nor fashion a sword or spear, nor invent a bridle to mount the horse and hunt the lion. Neither could he follow the arts of peace, construct the pipe and lyre, erect houses, place altars, inscribe laws, and, through letters, hold communion with the the wisdom of antiquity.'—Tibique liceat literarum et manuum beneficiis etiam nunc colloqui cum Platone, cum Aristotele, cum Hippocrate.

"But the hand is not a distinct instrument; nor is it properly a superadded part. The whole frame must correspond with the hand, and act with reference to it. Our purpose will not be answered by examining it alone; we must extend our view to all those parts of the body which are in strict connexion with the hand. For example, the bones from the shoulder to the finger ends, have that systematic arrangement which makes it essential to examine the whole extremity; and in order fully to comprehend the fine arrangement of the parts, which is necessary to the motions of the fingers, we must also compare the structure of the human body with that of other animals."

But the arm and hand are themselves only parts of a design:—

"By a skeleton is understood the system of bones, which, being internal, gives the characteristic form to the animal, and receives the action of the exterior muscles. This system belongs, however, only to one part of the animal kingdom, that higher division,—the animalia vertebrata,—which includes the whole chain of beings from man to fishes.

"The function of the greatest consequence to life is respiration; and the mode in which this is performed, that is to say, the manner in which the decarbonization of the blood is effected through its exposure to the atmosphere, produces a remarkable change in the whole frame-work of the animal body. Man, the mammalia, birds, reptiles, and fishes, have much of the mechanism of respiration in common; and there is a resemblance through them all, in the texture of the bones, in the action of the muscles, and in the arrangement of the nerves. They all possess the vertebral column or spine; and the existence of this column not only implies an internal skeleton, but that particular frame-work of ribs which is suited to move in breathing. But the ribs do not move of themselves, they must have appropriate muscles, and these muscles must have appropriate nerves; and for supplying these nerves there must be a spinal marrow. The spinal canal is as necessary to the spinal marrow as the skull is to the brain. So that we come down to understand the necessity of a vertebræ to the formation of a spinal marrow; and the reader may comprehend how much enters into the conception of the anatomist or naturalist, when the term is used, 'a vertebrated animal,' viz., an internal skeleton, a particular arrangement of respiratory organs, and a conformity in the nervous system."

Alluding to the close analogy which exists between the superior extremities of man, and those of the inferior animals, Sir Charles remarks, "We recognise the bones which form the upper extremity of man, in the fin of the whale, in the paddle of the turtle, and in the wing of the bird. We see the same bones perfectly suited to their purpose, in the paw of the lion or the bear, and equally fitted for motion in the hoof of the horse or in the foot of the camel, or adjusted for climbing or digging

in the long-clawed feet of the sloth or bear.

"It is obvious then that we should be occupied with too limited a view of our subject, were we to consider the human hand in any other light than as presenting the most perfect combination of parts: as exhibiting the parts which, in different animals are suited to particular purposes, so combined in the hand as to perform actions the most minute and complicated, consistently with powerful exertion."

In support of the general proposition last advanced, Sir Charles proceeds to a comparison of the anatomy of the quadrumana, loris, sloth, bear, eagle, lizard, horse, elephant, deer, frog, snail, bat, and in the antediluvian fossils, and satisfactorily proves that the economy of each is but a modification of the scheme adopted in the human frame. In treating of fossil animals, he opposes certain opinions of Buffon.

"On comparing some of the present races of animals with the fossil remains of individuals of the same family, some singular opinions on their imperfections have been expressed by Buffon and adopted by Cuvier. The animals I allude to are of the tardigrade family; the *Ai*, in which, as they believe, the defect of organization is the greatest; and *Unau*, which they consider only a little less miserably provided for existence. Modern travellers express pity for these animals,—whilst other quadrupeds, they say, range in boundless wilds, the sloth hangs supported by his strong arms,—a poor ill-formed creature, deficient as well as deformed, his hind legs too short, and his hair like withered grass; his looks, motions, and cries, conspire to excite pity; and, as if this were not enough, they say that his moaning makes the tiger relent and turn away. This is not a true picture: the sloth cannot walk like quadrupeds, but he stretches out his strong arms, and if he can hook on his claws to the inequalities of the ground, he drags himself along. This is the condition which authorizes such an expression as '*the bungled and faulty composition of the sloth*.' But when he reaches the branch on the rough bark of a tree, his progress is rapid; he climbs hand over head along the branches till they touch, and thus from bough to bough, and from tree to tree; he is most alive in the storm, and when the wind blows, and the trees stoop, and the branches wave and meet, he is then upon the march.

"The compassion expressed by these philosophers for animals which they consider imperfectly organised is uncalled for; as well might they pity the larva of the summer fly, which creeps in the bottom of a pool, because it cannot yet rise upon the wing. As the insect has no impulse to fly until the metamorphosis is perfect, and the wings are developed, so we have no reason to suppose that a disposition or instinct is given to animals, where there is no corresponding provision for motion."

Sir Charles is right. This sympathy is fallacious. It is the effect of an unconscious association between human sensibility and the structure and habits of the lower animals. Again:—

"Buffon, speaking of the extinct species of the tardigrade family, considers them as monsters by defect of organization; as attempts of nature in which she has failed to perfect her plan; that she has produced animals which have lived miserably, and which are effaced as failures from the list of living beings. Baron Cuvier does not express himself more favourably, when he says of the existing species, that they have so little resemblance to the organization of animals generally, and their structure is so much in contrast with that of other creatures, that he could believe them to be the remnants of an order unsuitable to the present system of nature; and if we are to look for their congeners, it must be in the interior of the earth, and in the ruins of the ancient world. The animals of the antediluvian world were not monsters; there was no lusus or extravagance. Hideous as they appear to us, and like the phantoms of a dream, they were adapted to the condition of the earth where they existed."

In treating of the comparative anatomy of the hand, our author says:—

"We are to confine ourselves to separate and examine the anterior extremity, and to observe the adaptation of its parts through the whole range of vertebrated animals. We shall view it as it exists in man, and in the higher division of animals which give suck—the mammalia;—in those which propagate by eggs—the oviparous animals—birds, reptiles, amphibia, and fishes; and we shall find the bones which are identified by distinct features, adjusted to various purposes, in all the series from the arm to the fin. We shall recognise them in the mole, formed into a powerful apparatus for digging, by which the animal soon covers itself, and burrows its way under ground. In the wing of the eagle we shall count every bone adapted to a new element, and as

powerful to rise in the air as the fin of the salmon is to strike through the water. The solid hoof of the horse, the cleft foot of the ruminant, the retractile claw of the feline tribe, the long folding nails of the sloth, are among the many changes that are found in the adjustment of the chain of bones which, in man, ministers to the compound motions of the hand."

We have here presented our readers with much highly interesting matter. For the author's observations on the peculiarities of the hand; on the muscles of the upper extremity; and the mechanical principles illustrated in its structure; and the substitution of other organs for the hand,—we refer the reader to the original treatise, where he will find amongst other things a vigorous attack on St.-Hilaire's theory of elemental parts. The chapters on sensibility and touch are drawn up with much neatness.

CHEMICAL RESEARCHES

INTO THE

NATURE OF CHOLERA.

By C. WITTSTOCK, *M.D., of Berlin.*

(From the "Cholera Archives," published by some of the first Physicians in the Prussian Capital.)

THE researches undertaken by M. Wittstock, at the instance of the Prussian government, to determine the chemical nature of the fluids in cholera, are extremely interesting, and deserve, says the *Gazette Médicale* of Paris, to be compared with those of Hermann in Moscow, Dr. O'Shaughnessy in London, and, finally, those of M. Rayer on the air expired during the disease. The experiments of M. Wittstock may be thus divided:—

1st. Experiments on the blood of cholera patients, and on the blood of patients who have died of the disease; 2nd. Experiments on the substances found in the intestinal canal and stomach; 3rd. Experiments on the fluids evacuated by stool or by vomiting; 4th. Experiments on the urine; 5th. On the composition of the air expired by cholera patients.

Nature of the Blood in Cholera.

A quantity of blood, weighing 5.012 grains, was drawn with the necessary precautions from the arm of a cholera patient named Geinert; the blood separated immediately into serum and the red clot; and the following method was taken to remove the serum as completely as possible. The blood was placed in a glass, and removed from the action of all external circumstances. On the first day the blood had lost 1.106 parts of its serum, on the second, 489; on the third 235 parts or grains; thus the blood separated into 3182 grains of clot, and 1830 grains of serum, or as 63.5. to 36.5. The serum had an evident alkaline action on turnsol paper, and its specific gravity was 1.0385. 100 grains of this serum when dried perfectly, gave 13.75 of a demi-transparent yellow mass. According to Berzelius, the serum of healthy blood has a specific gravity of 1.027 to 1.029, and forms in weight three-fourths of the whole blood. Healthy serum, whose specific gravity is 1.027 to 1.029, leaves after desiccation 9 5 parts of solid matter; but the blood of cholera patients, the gravity of which was 1.0385, gave a dry mass of 13.75, hence as the serum of healthy blood is 75 to 100, as Berzelius affirms, cholera blood loses 19 parts in the 100, or 5 pounds of water on the whole mass, estimated at 30 pounds. As it was extremely probable that the clot of choleric blood still contained a good deal of serum, experiments were made to ascertain the relative quantities of blood in healthy and choleric blood. Equal quantities of the two bloods were washed repeatedly in water and then dried; the healthy blood was found to contain 13 to 100 of fibrine, while the cholera blood gave only 6 to the 100 parts.

Experiments to determine the Acidity of Cholera Blood.

Two ounces of blood were placed in a small retort, which communicated with a vessel containing lime-water, and it was attempted to disengage carbonic acid by heat. The action of the substances which came over was always alkaline; there was no appearance of the disengagement of an acid. This experiment, variously and frequently repeated, always gave the same result, hence we may conclude that Hermann was mistaken when he asserted that both healthy and cholera blood had an acid reaction. If the simple distillation of blood does not produce any acid; if it is certain, as all writers assert, that the serum separated from the clot has always an alkaline reaction, we cannot suppose any acid principle to exist either in healthy or cholera blood. Treating the blood by alkaline carbonates, in order to calculate the quantity of free acid in the blood from the quantity of carbonic acid given off,

appears to be a very inconclusive experiment, since it is well known that the fibrin acts sometimes as a base, sometimes as an acid, and that in the latter case the fibrin may combine with the acid alkali, and give rise to carbonic acid.

Analysis of the Serum of Cholera Blood.

When the serum of the cholera patient, from whom the blood was drawn, coagulated, the mass appeared much more consistent than the serum of healthy persons, doubtless because it contained less water. The specific gravity of cholera serum taken from several patients was as follows:—The serum from the blood of a young man twenty years of age, was 1.0447, and gave after complete desiccation 16.5 parts of solid matter. The serum of a man who had the disease to a very dangerous degree, but did not die, was 1.041, and gave 14.5 per cent. of dry matter. The serum of a young man who also recovered was 1.043, and gave 15.5 per cent. of dry matter. In other experiments the relations were nearly the same, and all the elements at present known as existing in healthy blood, were found in the blood of cholera patients.

Analysis of Cholera Stools.

The specific gravity of the fluids evacuated by stool was nearly the same in all ages, varying from 1.0073 to 1.0082. The liquid, when exposed to the air, underwent no change; it was decidedly alkaline and never acid. It was treated by various reagents, which we cannot now spare place to mention, and it was found that 2000 grains of liquid excrement, of the specific gravity of 1.0082, gave 44 grains of a solid matter, which was composed as follows:—

Chloride of soda, with a few parts of chloride of potass	26.
Acetate of soda	6.
Albumen, with phosphate of lime	7.
Carbonate of soda, phosphate of soda, hydrochlorate of ammonia, salts with organic acids, traces of uric acid, and osmazome	5.
	44.

Hence the liquids which form the stools in cholera, are composed chiefly, 1st, of the serum of the blood disengaged into the intestinal canal; and, 2nd, of the intestinal mucosities. Experiments made on the fluid contained after death in the small intestines, gave, in general, the same results.

Experiments on the Matter vomited.

The liquid ejected by vomiting was first filtered, the filtered fluid reddened turnsol paper, became troubled when boiled, and gave precipitates with nitrate of silver and acetate of lead. Tincture of galls also produced a precipitate. A part of the liquid was found to contain acetic acid; the residue, when mixed with rectified spirit, produced a precipitate of a gray colour; this was well washed in alcohol, dried, and had the following properties:—In water it swelled excessively, formed a troubled mucilaginous solution, which was clouded by chloride of mercury, and gave an insoluble precipitate. The swollen mass, already mentioned, being frequently dissolved and dried, gave a substance no longer soluble in water, and which, when treated with muriatic acid, gave phosphate of lime, with acetic acid and albumen. The acetic extract gave a white precipitate, with ferro-cyanuret of potass. Ether extracted from the dried precipitate a fatty matter, and sulphuret of potass produced a solution, which was again precipitated by the acids.

The alcoholic liquid separated from the precipitate was dried, and the residue again dissolved in water, where it threw down a small quantity of phosphate of lime and albumen. The solution was acid, and by desiccation threw down crystals of chloride of soda, and formed, with tincture of galls, a precipitate, which gave ammoniacal vapour, carbonate of potass, and did not show the least trace of bile when nitric acid was added to the solution. From these experiments on the liquids evacuated by vomiting, we conclude that they were composed,

1st, Of saliva (albumen with phosphate of lime);

2nd, Osmazome, with soda and ammonia;

3rd, Chloride of soda;

4th, Chyme.

Analysis of the Matter contained in the Stomach of Cholera Patients after Death.

The reaction of this fluid was, in general, faintly acid; it did not present any difference, worth noticing, from the fluid evacuated by vomiting.

Analysis of the Urine.

The urine passed by a patient in a very dangerous state, was of the specific gravity of 1.0085. Nitric acid, mixed in very small quantity, separated, after several hours, some uric acid. When mixed with larger quantities of nitric acid, the urine did not present any of those changes indicating the presence of the resinous matter of bile. The results of various analyses did not show any remarkable difference from the urine of healthy persons, and any slight difference was not con-

stant; the urine of cholera patients was generally acid as in the healthy subject, and their specific gravities were the same.

Analysis of the Air expired.

This analysis, in order to avoid errors, was always made twice, and the expired air immediately received into vessels filled with mercury.

Experiment 1.

170. 8 parts of choleric air
mixed with 103. 5 of hydrogen.
After combustion 107. hence the air contained,—
Oxygen .. 34. 8 = 30. 37
Azote and carbonic acid 136. 0 = 79. 63

170. 8 100

Experiment 2.

188. 4 of choleric air
mixed to 110. 3 of hydrogen.
combustion 183. 9

The volume of air in this experiment contained, therefore, 20. 35 of oxygen to 79. 67 of azote and carbonic acid.

In various experiments repeated in the same way, the proportion of oxygen never mounted above 36. 0. The quantity of carbonic acid, expired by healthy persons, varies from 3. 3 to 13. 8. Allen and Pepys admit, as the mean term, 8 to 8. 5 per cent. Hence it results, from the above experiments, that the quantity of carbonic acid expired by a cholera patient is not more than from 2. 2 to 3. 5 per cent., nearly the quarter of that which is expired by healthy persons.

MIDDLESEX HOSPITAL.

(*From a Correspondent.*)

PULSATING TUMOUR OF THE ABDOMEN MISTAKEN FOR ANEURYSM.

The following interesting case is at present in this hospital.

Mary Bonus, ætat. 33, a single woman, having the appearance of health, was admitted under Dr. Watson, on September 3. She stated that she had been ill three years with absence of the catamenia; during that period and for the last twelve months had suffered from pain in the back, and a pulsating tumour at the pit of the stomach. She had been under medical treatment ever since the tumour appeared, but was informed that little relief could be afforded her. She further stated, that she was habitually costive, and that when the bowels were acted on, the tumour was lessened, and *vice versa*. This naturally suggested the notion of its being connected with the colon. She was, therefore, ordered large warm water enemata to be thrown up the rectum, and some *Ol. Ricini* to be given every morning. This brought away three or four copious evacuations, consisting chiefly of large scybalæ. By the 10th the tumour had entirely disappeared, and the evacuations were free from scybalæ. If the bowels are allowed to remain constipated, the tumour returns and as quickly disappears when they are acted upon.

The chief point of interest in this case is, that from want probably of the opportunity of due discrimination, the real nature of the disease was mistaken by several practitioners, who declared it to be aneurysm. These are the cases in which empirics with their violent weapons sometimes succeed, and obtain a victory over the regularly educated practitioner.

PHLEBITIS.—PHLEGMASIA DOLENS.

Elizabeth Toyer, ætat. 26, servant, a single woman, was admitted September 21, under Dr. Watson; she says she had been ill a fortnight with pain in the abdomen and back, apparently recovering from fever. She was going on to convalescence, and the catamenia appeared on the morning of the 23rd, attended with increased pains in the loins, and occasionally in the legs. She stated that they usually continued six or seven days. On the morning of the 26th they ceased, and in the evening she was attacked with more acute pain, extending from the right groin to the knee. On visiting her on the 27th, there was a marked alteration in her countenance. The whole of the right leg was enormously swollen, tense, hot, and painful. When interrogated as to the seat of her sufferings, she directed them to the course of the femoral vein, more especially at its saphenous opening. She also had this morning a severe attack of rigors; pulse 120, and small; nausea, and some pain over the uterine region. Ordered twenty leeches to the right groin, and twelve to the left.

28. But little relief from the leeches, the tension of the limb still remains very great. As she was already under the influence of mercury, none was given her, but the bowels were freely evacuated.

29. The vital powers were so depressed that it was considered necessary after a consultation by Drs. Watson, Ley, and Mr. Arnott (the two latter gentlemen have particularly devoted their attention to this class of diseases), that the treatment should be altered. Wine and ammonia were accordingly given, and the

patient was placed upon Earle's bed; since which the swelling has considerably lessened, but pain, tension, and swelling, occurred in the left leg, in a much less degree, however, than in the right.

October 4. She is now going on favourably, though in a precarious state.

At the Medical Society of the Middlesex Hospital a paper was read by, if we rightly recollect, Mr. Corp, the house apothecary. From the valuable cases produced, a more luminous exposition of the disease than this gentleman gave, might have been expected. The subject is of great importance, and has hitherto been much overlooked. Of this there can be no doubt, that an inflammation of the veins of the leg and consequent œdema are often connected with disordered functions of the uterus. In what points does this case differ from phlegmasia dolens after parturition?

DELIRIUM TREMENS.—FAILURE OF OPIUM AND STIMULANTS.

During an attendance on the medical practice of this hospital for the last twelve months, the writer has witnessed four cases of the above disease, and in only one of them was the usual treatment by opium and stimulants successful. This circumstance affords some ground for calling in question the propriety of adhering always to that plan of treatment. The abuse of ardent spirits alone does not appear to be so much an exciting cause, as the consecutive loathing and nausea of animal food, ultimately amounting to a perfect disgust or disrelish for solid matter of any kind. In a case, witnessed by us, of a man who was daily accustomed to take 18 or 20 glasses of gin, and for two years was unable to touch anything but a crust of bread in the evening, the patient ultimately died.

We do not find that those persons who enjoy all the luxuries of the table fall victims to this disease; its fatality is almost wholly among those who, after expending the major part of their earnings in procuring their favourite beverage, cannot supply themselves with the common necessaries of existence; hence, finding that in proportion to an excessive indulgence in drinking, a diminution in their relish of animal food accrues, they hurry blindly on, impressed with the belief, that if they do not drink freely, their strength will forsake them.

Not only in the three subjoined cases, but in others, have we noticed the changes that have taken place in the structure of the heart, especially its muscular parietes, but whether those changes must be attributed to cause or effect, is another matter. The left side of this viscus is found very flabby, so that when cut into, the same collapse takes place as in slitting open the right ventricle. The whole muscle resembles a faded autumnal leaf, and, when pinched, is so attenuated and softened, as often to break down under the fingers. The blood, if any be present (which rarely happens), is but semi-coagulated, and assumes the character of sanguinolent pus or curd. As might be expected in this affection, the liver and kidneys are usually found altered in structure, the former being pale from a diminution of its vascular portion, and soft in texture. The same may be said of the kidneys. In them the hypertrophy of the cortical substance is often so great as to remove altogether any trace of the tubulated portion, and the calyces, with their mamillæ, alone afford a channel for the secreted fluid.

CASE I.

A man, 36 years of age, a porter to a publican, and a noted drunkard, was received into the hospital for slight injury done to the ankle four days previously. His countenance expressed wildness and ferocity, and it was said that he had been very furious and unmanageable on the preceding night. Towards evening his whole frame was violently agitated, and was covered by a profuse, clammy, and fetid perspiration. He constantly talked as if to persons of his acquaintance, who were not present, but was perfectly rational when conversed with. These symptoms increased, and he was confined in bed. At 6 p.m. he took ʒi of *laudanum*. He then became calmer, but did not evince the slightest disposition to sleep, and died, greatly excited, at nine p.m., three hours from the occurrence of the paroxysm.

Autopsy.—The lungs were found healthy; the heart was rather large and very flabby, and all its cavities were empty. The parietes of the left ventricle were so thin and soft, that the slightest force broke down its substance. The liver and kidneys were as above described. There was a large collection of clear fluid, both external and within the brain, but no vestige of excessive vascularity existed.

CASE II.

This case was more mild. It was produced by the combined effects of lead and spirits. He was treated by Dr. Watson for an attack of colica pictonum, which was shortly removed by *opium* and *castor oil*; but, six days after his admission, he was found to be occasionally delirious, and was greatly alarmed on finding that

he could not remember the most simple things. He had some tremors of the limbs, and his pulse was weak and feeble. He took one pint of porter, with twenty-five minims of solution of *acetate of morphia*. Towards night he became so furious and rambling, that restraint in bed was found necessary, and he was ordered to repeat the porter and morphia every four hours, and to have some gin. After taking what was equivalent to three grains of *morphia*, he obtained some sleep, and on awaking was quite collected, and said he was well again, though he still exhibited a degree of wildness in his manner. He admitted that he had drunk large quantities of gin to lull the pain of repeated attacks of colic. He was unable to leave off the morphia for several nights, but he rapidly improved under a generous diet, with porter, &c., and left the hospital for Bath, to use the waters for a palsy of the wrists of some weeks standing. He was by trade a painter.

CASE III.

The subject of the next case was a coal-whipper, forty-three years of age, admitted under Dr. HAWKINS.—July 24; He applied at the hospital for relief last evening under the following circumstances:—Whilst at work the previous day, he was suddenly seized with trembling of the limbs, and giddiness, with tinnitus aurium. The house-surgeon saw him, and thinking he was threatened with apoplexy, bled him to sixteen ounces. He stated that for several nights past he could get no sleep, and was very restless. He had addicted himself to drinking large quantities of "rum," having been formerly in the Indies. He once before had a similar attack. This morning (July 24) he is greatly agitated, and appears afraid of every one who approaches his bed; he answers rationally. The Doctor made some remarks on the peculiar physiognomy of such patients, and on his view of the nature of the disease, which he conceived to arise from chronic thickening of the serous membrane of the brain. He stated that opium would form his chief remedy, and therefore ordered ten minims of *liq. morphiæ acetatis* every six hours in camphor julep. Towards evening the man became so furious that he was put under confinement, talking and swearing immoderately, but being rational when spoken to. His body was bathed in perspirable matter, and his muscular frame constantly in strong action. He was ordered to have wine and porter, with ʒi of *laudanum*, at six p.m.

Nine p.m. *Tr. opii* ʒiss. Rum, eggs, and milk.

Twelve p.m. No disposition to rest, and as furious as before the laudanum was given. Rep. *tr. opii* ʒiss stat. The Doctor pointed out the great diminution of sound and impulse in the heart's action.

July 25. Five a.m. A great alteration was now observed. His countenance was sunken and ghastly, and all the symptoms were even more severe, the perspiration being most profuse. Rep. *tr. opii* ʒiss statim.

Nine a.m. Rather more quiet, but the stillness must arise from exhaustion rather than the opium. His pupils are only *now* become affected.

Twelve p.m. After a short interval of quietude, he had a return of all his severe symptoms, and died at one meridie.

It is computed that he took ʒix of laudanum, ½ pint of wine, ʒxij of rum, and one pint of porter, in sixteen hours.

Autopsy, 24 hours after death.—The arachnoid milky, and puckered in parts. The whole organ bathed in clear serum; no vascularity; the convolutions small. The heart was flabby, and in its cavities was found a fluid more resembling pus, deeply coloured by blood. The walls of the ventricles were thinner than usual, and soft in texture. The liver and kidneys pale

CASE IV.

John K., aged 43, a coachman, who has lately been out of employ, and suffered therefrom much grief and annoyance, was admitted September 27, under Dr. HAWKINS, with the following symptoms:—Countenance flushed, scalp hot, an expression of fear in his features, great tremors of the hands. Pulse 100 and wiry. His wife informed us, that on the morning of the 25th he was found in his stable; had endeavoured to obtain employment; was very dull, and that when roused, he evinced a more than ordinary peevishness of manner. He complained of headach, and felt very dejected. On the evening of the 27th, his countenance was more flushed, his scalp hotter, and the pulse very hard, beating 100, so that the apothecary thought proper to bleed him to ʒxij from the arm. This depletion did not appear to have any salutary effect, for he became so ungovernable, that it was found necessary to strap him down in bed, and ten leeches were applied to each temple. He had iij gr. of *Calomel* and ¼ gr. *Opium* every hour, with inunction of *Mercurial Ointment* on the thighs. This practice was commenced at 6 p.m. At 10 p.m. he was raving, and very violent, hallooing and talking to his wife and friends, but answering all questions rationally. His tongue was clean and moist. Pulse 120, and still wiry, body extremely hot, and free

from moisture. Ordered *statim*, *Calom.* gr. x. *Opii* gr. j.

Twelve p.m. Still raving, and his whole frame in constant motion; heaving of the trunk of the body. A profuse perspiration now covered him. Pulse was weaker. Continue pil. *Cal.* c. *Op.* om. hor.

28, a.m. Has had no sleep. Bowels opened by a common enema. Greater depression of the vital powers. *Calom.* grs. x, *Opii* gr. ij, statim. He is not so sensible when spoken to as before; slightly affected by the opium. Towards evening, the perspirations and feeble state of the pulse induced the doctor to order him ʒiss of *Laudanum* in ʒiss of gin.

At twelve p.m. he was not disposed to sleep, and he then had another opiate in gin as before.

29, eleven a.m. Dozed for two hours during the night; but when he awoke he became noisy, and talked as before. Countenance now much sunk; pupils contracted; is more sensible when spoken to. Repeat the gin and *tr. opii* ʒj.

At two p.m. he fell into a calm sleep, and remained so until nine p.m., breathing quietly. His pulse 110 and feeble, when he suddenly awoke, sighed heavily, and expired at half-past nine.

Autopsy twenty-four hours after death.—The arachnoid was raised in several parts by a collection of clear serum, which was more abundant at the base of the brain. That viscus itself was free from vascularity, and no other morbid appearance was noticed. In the chest all the viscera were healthy; the liver was pale, and the kidneys were greatly diminished in their cortical portions, so that only a few tubuli could be seen. The muscular structure of the heart was not so pale and soft as in the other cases.

LONDON MEDICAL SOCIETY.

Monday, October 21st, 1833.

Mr. KINGDON, President.

CONCLUSION OF THE DEBATE ON THE RICE AND CHOLERA QUESTION.

THE attendance this evening was still larger than it has yet been since the discussion commenced. Notwithstanding, however, the continuance of so high a degree of interest, the President determined to offer a temporary arrest of the debate, under the impression that members should have some longer interval than a week to ponder on the facts before them, or, at any rate, until they were prepared to adduce some fresh proofs, either favourable to or against the doctrine of Dr. Tytler, thoroughly digested, and indisputably bearing on the question. Accordingly, when the period for commencing the argument had arrived,

The PRESIDENT rose, and expressed his opinion that the discussion had now almost come to the period of its natural conclusion. On looking back to the circumstances under which it began, he remembered that originally it was simply proposed that certain facts and conclusions should be laid before the Society. That object had since been attained; in fact, the proceedings had carried them beyond it, and the debate ought now to end, for unless a limit were put, the Society might go on with it all the session, although no advantage could be obtained in the present state of their knowledge on the subject, by such a course. He should, therefore, with the permission of the Society, give Dr. Tytler the privilege of a final reply at the close of the present evening. He felt, on the one hand, that it was quite impossible to satisfy every member that diseased rice had been the whole and sole cause of cholera in this country during the last two years; and, on the other, that they could not expect to convince Dr. Tytler that his facts and views were wrong. The time of the Society, therefore, might now be more wisely employed on other subjects. Thus much, however, he ought to say, had been done. Dr. Tytler had unquestionably shown them, that diseased rice had caused a vast portion of disease in India, and that diseased rice existed in England,—facts which he (the President) presumed none of the members before knew. *(Hear, hear, hear.)*

Mr. LANGFORD could not assent to the latter portion of the President's speech, though he was unwilling that the debate should end. He, for one, like Dr. Johnson, thought that the conclusions of Dr. Tytler were "dubious."

Mr. PROCTOR was not disposed to end the debate yet. He wished to combat the opinion of Dr. Ayre, that the same cholera existed in 1817 in England which existed now.

Dr. UWINS, Mr. DENDY, and Mr. LINNACRE, also had many things to state. The latter gentleman desired to know whether Dr. Tytler meant to say that rice was the *sole* cause, or only *one* cause, of the cholera in India.

Mr. HOWELL also wanted to know what treatment Dr. Tytler employed, for a friend of his, in India, had told him that they knew nothing about it *there*, and he (Mr. H.) was sure that practitioners did not know how to cure it *here*.

Mr. STEPHENS thought the subject far too important to others, besides medical men, for the Society to let the discussion arrive at its "natural end" now. As yet he considered there were but few converts in the Society to Dr. Tytler's view, though the public were under strong apprehensions against rice. He admired the great dexterity of Dr. Tytler as a debater, but it should be remembered that his facts were derived from the banks of the Ganges, whence nobody was present to contradict them, and in which distant position it was difficult to assail him with success. When he came, in the progress of his argument, to *England*, he met with such sturdy facts against him, that he was always obliged to take wing and fly back again to the east (Mr. Stephens said much more on the subject, but uncouth intimations that he was departing from the "question," and a gentle hint from the President, arrested him in his course.) He therefore concluded by expressing his surprise that Dr. Tytler had not detected numerous discrepancies which he (Mr. S.) thought were apparent in the Doctor's statements, and proposed that a vote should be taken on the question, "whether rice was or not the cause of cholera."

Dr. WHITING objected to this course as exceedingly destructive to all professional reputation, and said that he should feel it his duty to leave the room, rather than take part on either side. None of the members, it should be recollected, had witnessed any of the facts mentioned by Dr. Tytler, and therefore they felt doubtful of them. He (Dr. W.) himself felt doubt as to the production of cholera by rice in this country, yet he should be one of the last men to say that Dr. Tytler was wrong in any one of his statements. Perhaps it might be observed that he (Dr. W.) ought by this time to have had sufficient evidence on the subject to enable him to form a decided opinion, and certainly he had had as much experience as any man, in the cholera in this country, but the advantage of all that experience was lost to him on the particular question before the Society, and on the facts adduced by Dr. Tytler; he could not, therefore, decide. But should the cholera again prevail in England (and it was still lingering here), though he (Dr. W.) believed that it spread by contagion, yet he would endeavour to sift the question to the bottom, and then either add his experience to that of Dr. Tytler, or balance it against it.

Mr. LANGFORD wished to draw Dr. Tytler's attention to an important fact respecting Ireland. Dr. Tytler said on a former evening, that cholera resulted in Ireland from a supply of rice sent over by way of charity from Liverpool. Now previous to October 1832, the cholera raged excessively in Tipperary and Kilkenny. Say that the Irish had been living chiefly on rice. But in October they begin to dig up their potatoes, and in that month, November, December, and January, they have nothing but potatoes and butter-milk for food. Now if rice were the cause of cholera, the disease should have stopped in those counties in the November of last year. But it did no such thing; and this, therefore, was a conclusive fact against the doctrine of rice.

The PRESIDENT.—It is not exactly fair to set off such instances against the facts Dr. Tytler has brought from India, for he professes to be ignorant of those which have occurred in Great Britain, and cannot, therefore, be prepared to reply to or explain adverse statements of this kind.

Mr. LANGFORD, however, proceeded with some other objections, still drawn from occurrences in England, and concluded by adverting to India, offering, in reply to the statement that cholera broke out on the banks of rivers according as boats conveyed rice to the markets on shore,—that the boats carried contagion, and not rice that was capable of producing the disease.

Mr. DENDY seemed favourable to the proposition of a vote, for he thought that members had had equally sufficient time for pronouncing *against* the rice doctrine, as Dr. Tytler had employed at Jessore in deciding *for* it. He (Mr. D.) had two grounds of objection to Dr. Tytler's statements. First, that other gentlemen who had seen the cholera at Jessore, did not draw the same conclusions as Dr. Tytler; and amongst these was Colonel Leslie Walker, a friend of his (Mr. D.), a very brave and well-known officer, who commanded a division of troops in the Burmese war. That gentleman believed that malaria was the cause of the cholera, and informed him (Mr. D.) that whenever the troops, during their march, approached the jungles of certain districts, cholera immediately began to rage amongst them, and the men dropped all around, victims to a foul atmosphere. But as soon as they emerged from those jungles the disease stopped, although the men were using the self-same diet on each occasion. Colonel Walker's opinion, indeed, was, in every respect, against that of Dr. T. Another proof, in favour of the "influence of locality," Mr. D. produced from some facts which went to show that the scouring and purifying of an apartment in India, in which cholera had appeared, instantly caused the banishment of the disease. His second objection to Dr. Tyt-

ler was this, that he (Dr. T.) had not observed strangury in more than one or two cases as a symptom of the cholera in India. He (Mr. D.) contended that suppression of urine was so universal a diagnostic of the cholera, both here and in the east, that the fact of Dr. Tytler having overlooked it, afforded good reason for believing that he had committed many other errors of circumstance and judgment, and that his observation of occurrences in India must not be implicitly relied on in important matters. Every one must admire the excessive tact and great learning displayed by Dr. Tytler in his argument, but he thought that the Doctor laboured under misconceptions. In private the Doctor had said to him that this was not the last by a hundred discussions that would take place on the rice question, and that his confidence of the effect which these disclosures would produce on the public mind was such, that he (Dr. T.) was sure no more cholera would prevail in England from a short time hence, for bad rice would soon be shut out of its markets. He (Mr. D.) could only *hope* that cholera would find such an end, and if it did, the very least that could be done in honour of the discoveries and perseverance of Dr. T., would be the placing of a statue to his honour by the side of that of the philanthropic Howard. (*Hear, hear.*)

Dr. Copland said, he had read in The Lancet, though unfortunately he had not heard, the debates on this question, and he now rose to say also, that he had long since perused the *brochure* of Dr. Tytler. At that time he came to the conclusion, that the subject had been sufficiently investigated in India, by old as well as young surgeons—who, by-the-by, were as well qualified by their education to decide thereon as the older surgeons. Those gentlemen had reported to the medical boards, that the rice doctrine was not borne out by facts, and such was his (Dr. C.'s) impression. He now wished to ask Dr. Tytler, as the cholera continued so long in India after 1817, whether rice had ever, since that time, been diseased in quality, and whether the people were not able to distinguish the bad from the good.

Mr. Hooper said, that in the workhouse of his district, there had been as much cholera as in any workhouse in London, and yet he was sure that not fourteen pounds of rice had been eaten there for the last three years, and what they *had* used was the best. Besides, contrary to the researches of Dr. Tytler, he (Mr. H.) could find no bad rice in any of the shops of London, though he had visited many. The grocers said that they could get no sale for bad rice; that none would be bought that was worth less than fourpence a pound. Mr. Dendy had obtained similar answers. Moreover, Mr. Dendy had eaten some of the *Ass* by way of experiment, and found no ill effects from it. Further; a friend of his, who came from Paris, had a little boy ill with a diarrhœa, for which the father administered rice-water, by advice of a French physician, and stopped the disorder. On the diarrhœa returning when he arrived in England, he again gave rice-water with good effect, and the boy was now quite well.

Mr. Birtwhistle said he had been in the three Presidencies of India as well as China, and had had ample opportunities of witnessing the direful effects resulting from eating rice of an inferior quality. He thought Dr. Tytler's opinions were entitled to the greatest consideration. He (Mr. B.) was in Bombay in 1828, when the ships were laid up, waiting for cargoes, and he now well remembered that in those ships where rice was issued in lieu of bread, the cholera invariably prevailed. One of the Company's large ships on the short voyage from Bombay to Singapore lost thirty-two men from cholera, and he was told in China that rice had been regularly issued to the crew. The disease was not arrested till they arrived at Singapore, and a change was made in the diet. He had attended several of the country ships in China, on board of which Lascars were constantly dying after three or four hours' illness, and Captain Stewart of the *Golconda*, as well as others who had resided in India some years, attributed it to the bad quality of the rice. The facts relative to fowls becoming diseased after eating rice, was well known to gentlemen who had sailed to India. With regard to the identity of the diseases in India and England, he Mr. B., after having seen cholera in the three Presidencies, and most of the cases which had occurred in the eastern part of the metropolis, considered them as one and the same disease. He differed from Mr. Dendy as to the suppression of urine, for he had seen cases both here and in India in which urine was freely evacuated.

Mr. Hooper rose to adduce fresh cause against the ricean etiology, in the fact, that children at the breast died of the cholera while the mother had no disorder. He could name a dozen such instances.

Dr. Tytler.—How many did you say?

Mr. Hooper.—A dozen at least.

Dr. Tytler.—I thank you for them. I will show that they tend to prove my case. I should now be permitted to reply, but I have no time allowed me to do so. I have

just five-and-twenty minutes by that clock to refute all that was unanswered last evening, and all that has been said to-night, and I cannot do it in the time, though I can answer every word that has been said.

Mr. Procter.—I think, Sir, if we reckon the whole of the four nights, it will be found that Dr. Tytler has had Benjamin's mess.

Dr. Tytler.—I regret this limit of time the more, because I can smash to atoms all that has been said. Gentlemen, this is not a question of mere medical pathology. It is one which affects the lives and happiness of individuals to an unbounded extent; from the monarch on the throne to the beggar in the street, the virgin and the matron, the minister and the cabinet, the gentleman in his drawing-room and the tradesman in his shop, the sailor in his ship and the soldier in the field,—all ranks and classes of society are affected by it. And is this a question that is to be set at rest, because this Society has not time to discuss it? ("*No*," "*No*.") I can distinctly prove from statements, not furnished by myself, but by the testimony of others, that morbus oryzeus has existed in England for years without being known, and if it be true that English commercial cupidity has poisoned our fellow-creatures, it would be the foulest slander against the profession were this question to be disposed of, because the London Medical Society had not time to discuss it. (*Cries of* "*No*," "*No*.")

The President.—I am sure that my friend Dr. Tytler must feel that no part of his reflection can possibly bear against any fellow of this Society.

Dr. Tytler.—I stand corrected, Sir, but I do insist, that unless I can be shown to be the veriest empiric that ever wielded a lancet (*Cries of* "*No*," "*No*," "*Certainly not*"), I ought to be fully heard. I will now come at once to the points before me. I never pretended to know anything about the cholera in England. I merely state facts respecting India, and leave it to you to draw inferences respecting the disease in this country. It has been acknowledged by Dr. Whiting, that no two diseases can be more similar than the disease I have had described to me as existing in England, and the disease which I have observed in India, and the conclusions after that seem to be very obvious.—Mr. Dendy has accused me of incorrect observation respecting the symptom of strangury, but Mr. Dendy forgets that I have not had time to lay the whole of my details before the Society. I have said that I did not particularly notice the symptom of strangury except in one case; but here are before me a whole series of experiments, which prove the effects of diseased rice on the urinary and genital organs, as in the case of the goats, and from which I draw the conclusion that there is ergot in rice as well as in rye, because the latter produces specific effects on the uterus.—With regard to Mr. Langford's observations, I never asserted that rice was the sole cause of cholera, but only that there was a deleterious quality in certain kinds of rice, that that rice was exposed for sale in the English markets, and that we ought to avoid its use. Mr. Langford does not adduce an instance in which the rice is not used in the London workhouses, and I ask no more than that admission. But he says that it was all so good, that it cost threepence a pound. I don't judge of rice by its price, but by its effects,—no, not even if it were 500 guineas an ounce. I know that in India rice produced bad effects, and I know that it will produce them here too. There is the rice, and there also is the cholera. What care I about the price of the poison, if the effects are poisonous? "The rice seemed to be excellent," says Mr. Langford. Why the apparent purity, which rice may be made to assume, is only a better reason for guarding against that grain. It is a demon of destruction dressed as an angel of light.—Now, with respect to Dr. Seaone, he admits that there was rice at Cadiz, but he says it was Valencia rice. I don't care about names. It is the effects I look to. It was *called* "Valencia rice." There is the error of looking to names. The very Bengal rice itself was sold to me in London as *African* rice. Again; in America we have the cholera, and gentlemen call the rice there *American* rice. But even if it be so, remember that it is the existence of *morbus oryzeus* which I am endeavouring to prove to you. I say, however, that Bengal rice penetrates to every country, and that that rice is taken in immense quantities to America.—I will now advert to the army of Arracan, which Mr. Dendy has mentioned. I did not myself want to speak of it, because the subject is connected with other most important inquiries. Mr. Dendy, however, has forced me to it by quoting Colonel Leslie Walker. Why, Gentlemen, I was acting superintending surgeon of that army. A court of inquiry was called in Arracan, regarding the great sickness which prevailed in the army, and Colonel Walker was the very first witness examined at that court, yet in his evidence not one word appears respecting the opinions said by Mr. Dendy to be entertained by the Colonel. But what will the Society think when I have read the following extracts from the "Sum-

mary of Evidence" submitted to the Arracan court of inquiry regarding the very regiment which Colonel Walker commanded? "At the conclusion of Captain Welsh's testimony," says the summary, "we learn a fact most important in a medical point of view, viz., that he is unable to use plain rice, in consequence of its affecting his stomach." The summary then goes on thus:—"From the testimony of the next witness, Lieutenant Kelly, it is ascertained that the rice issued to the soldiers of the regiment has been very bad, and that, moreover, the generality of the officers are compelled at Arracan to subsist on rice." Again; "While Captain Welsh and other officers who, from various causes, do not make copious use of this grain, have enjoyed health amidst surrounding sickness and mortality, others by whom it is *freely employed*, have been affected with severe indisposition, at the time the native troops, who have scarcely any other food than rice, are nearly entirely in hospital,—a remark also applicable to the European portion of the army, which is, likewise, unfortunately obliged, from want of other sustenance, to have recourse to the indiscriminate employment of the same grain." The summary of that evidence is now in the Company's archives in Leadenhall-street, and there Mr. Dendy can examine it. As to the statement that rice was not used in Clerkenwell prison until after the cholera had commenced there, why that statement proves no more than this, —that the guardians of the prison were not before aware of rice having got into the prison. They knew nothing of the rice until they saw the grain go in at the door in grain. But how many other modes are there for its entrance? When gentlemen say that the disease was produced by malaria, they don't feel bound to show how that malaria got into the prison, whether at the doors or the windows, in a pudding or a shoulder of mutton. *(Laughter.)* It is enough for *them* to say, "There is the malaria, and there is the cholera;" and I say, "There is the cholera, and there has been the rice." Why a gentleman after the last evening's debate showed me a sample of deleterious rice, which he told me he had purchased in Clerkenwell parish. It is not the right way to oppose me for persons to say they have seen no rice go into this and into that place. I expected to night that gentlemen would have come here with chemical tests to prove beyond doubt that no rice was mixed with the bread or the flour of these various establishments. This they have not done, and my facts are therefore not affected at all by their statements.—Then I am marched by Mr. Langford to Manchester and Bilston, and he quotes the letters of Dr. Lee and Mr. Ollier to show that rice had nothing to do with cholera. Why, those gentlemen only wrote from their *belief* on the disputed subject, while we have the positive testimony of both of them to the fact that rice exists in those towns.

Mr. Langford.—But *Mr. Ollier* does not speak from his belief.

Dr. Tytler.—He certainly does not use the word "belief," but he says that rice never, "within his *knowledge*," was given to the prisoners.

Mr. Langford.—But Mr. Ollier had such a superintendence over the prison, that he was likely to have a true knowledge of what was eaten there.

Dr. Tytler.—Yes, but the word "knowledge" amounts to nothing in such a case. Why, rice was not given to the Manchester prisoners according to *my* knowledge, nor according to *your* knowledge, nor, it seems, according to *Mr. Ollier's* knowledge. Of course he had no knowledge of it, or he would not have allowed the rice to be given, since he did not mean it to be eaten. But Bengal rice *is* in Manchester, for it is acknowledged to be given to poultry there. —I next come to Dr. Johnson, and I am sorry my learned antagonist is not here to-night, that I might ask him what had become of all the deaths between 1818, when he wrote his remark on my pamphlet, and 1823, when the Madras Board sent out their circulars. Dr. Johnson talked of rocks. I can tell Dr. Johnson, that there are more rocks than the Allahabad rock in cholera. There are samsoo rocks and Mauritius rocks. I should like to know from what samsoo derives its poisonous qualities, if not from the rice from which it is distilled? It was asserted in India that my opinions were not conclusive, because the disease existed in places where the rice was not to be found. In fact, young men (of whom one gentleman has spoken as being better educated than men who, like myself, have been years and years in active service) came out to India, and stated that the "blue cholera," and the "spasmodic cholera," and the "Indian cholera," raged at Manchester and Sunderland, and in the interior of England, where no rice was used; though this was an absolute fiction. But what does the Government do? Why, they were of necessity obliged to attend to those statements, and of course believed mine to be false, as I had not been in England, and thus, more than once, have whole armies been put in jeopardy by declarations which I have now proved to be completely and entirely erroneous. *(Hear, hear.)* But,

further, Gentlemen. This day I received from Birmingham a newspaper which contains the following paragraph:—"In our last page will be found an important communication," my two first speeches at this Society, reported in THE LANCET, "of considerable length on the subject of cholera, made by a Doctor Tytler to the London Medical Society, on the 30th ult. and the 5th inst. In all probability we should not have devoted so large a space to an article upon such a subject, had it not come to our own knowledge, that the article to which the Doctor makes so direct an allusion, as the cause of this direful and devastating disease has been within the last two years forced into very general consumption in the neighbourhood of this town."—*Birmingham Advertiser*, October 17. There then is an answer at once to the denials in India, that rice is eaten in England. Now, Gentlemen, I contend that if I can find an instance of a single workhouse in which the bad effects of rice were evident, my position is established. (Exclamations of "Undoubtedly," "Certainly," "Hear," "hear.") In the last Number but one of THE LANCET, an example is given of a disease occurring from rice in the Hackney Road Asylum, fourteen or fifteen years ago, the very period when Mr. Headland says that rice was mixed with flour in England; and if Mr. Wakley had never published another line but that paragraph, he would have deserved the heartfelt gratitude of his countrymen. I need not say how deeply science and the public is indebted to that gentleman for the pains he has taken, and the great portion of his journal which he has devoted to making my facts known to the profession. But by whom were the effects of the rice detected in the Asylum? Was it by the Royal Colleges of Physicians or Surgeons, or by the Worshipful Company of Apothecaries, or by the united body of science in London to whose care the public health is consigned? No; but it was by the schoolmaster of the institution; and here, in the very year that Dr. Johnson said in his pages that my facts were so "dubious" that he would not give them publicity, was this poison producing its effects in the metropolis of England, without a single medical man being aware of the truth. Well, then, as to the disease appearing in Ireland. (Dr. Tytler here repeated his remarks of a previous evening relative to the gift of rice from Liverpool.) I was not then aware that the disease which I had always heard called "typhus," was really cholera, until I was told so to-night in this Society. As to the conviction of gentlemen respecting my evidence, one gentleman has said that a few months having settled my opinions in India, a few hours should settle the opinion of people against it in England. It is true that I was at Jessore only a few months, but I was at Allahabad for five years, and all that time was observing facts. Well, then, again, it is said "How comes rice to be used in India if all these things are true? Why the reason is this, that rice was cheap *there*, and fetched a high remunerating price abroad. Hence it was, that my opinions were denied, and falsified, and kept down, because their tendency was to interfere with commercial speculations and profits in Europe, a fact which I will prove by the following extract from the *Calcutta Journal* of March the 9th, 1820, signed "*Verax*:"—"Thus has it been proved, as Dr. Tytler concludes, that the adoption of his opinion would have prevented the extension of this direful disorder; and better had it been for the inhabitants of the Mauritius, that a portion of them had perished from famine, than that the horrible poison should have been disseminated amongst them. The low price which rice bears in England, according to the latest advices, would seem to indicate a less incredulous sentiment with regard to Dr. Tytler's profound theory; and though the liberality and philanthropy of the Calcutta Mercantile Community is proverbial, I question whether Dr. T. will be entitled to their acknowledgments though he may consider himself so, and to the gratitude of his countrymen for giving publicity to the discovery." Now rice is furnished to the London workhouses at 3*d*. a pound, and I shall be glad to know how a contractor can make a profit on the grain unless he charges perhaps 3*d*. a pound for what costs him 1½*d*. It is owing to this strife for money that disease has always appeared in armies and establishments where rice is furnished by contract. It is purchased cheap in India, and retailed at a comparatively dear price in England. Am I at a loss, then, to know why my facts have so long been kept from the profession in England, and form what is now considered to be a novel question in this Society? One gentleman says that the Board of India has already paid proper attention to my facts. Why Gentlemen, in 1819 I sent the work I had written on the subject to that Board, and what was the result? Why, the book was soon after returned to me with a message, that "short answers were required!" Such answers I sent immediately after, some of them occupying but three lines, and some but three words, while the great mass of my facts was wholly disregarded

by the Board. These circumstances were communicated by me to the supreme government in 1821, so that proof of them may be obtained. In 1823 the Medical Board of Bengal admitted that my facts were incontrovertible, and my conclusions valid, while the Board of Madras, as it appears from Dr. Johnson's statements (for I never knew of the fact before last Monday night), were calling on Mr. Cowen and Mr. Hamilton to disprove those facts by means of positive evidence.—I must now revert to the few remaining points. One gentleman has said that children at the breast have died of cholera, though the mother remained in health. Why it is the natural tendency of ingesta to flow to some great outlet of the body, and it is well known that nurses are enjoined to refrain from all articles of diet which may affect—not them—but the children which they suckle. If the poison of the deleterious rice be determined to the stomach, cholera follows; if to the bowels, dysentery; if to the liver, an overflow of bile and yellow fever; if to the eyes, ophthalmia; if to the breasts, disease in the infant. But Mr. Dendy is said to have eaten some of the *kun*. Pray may I ask, how much he ate?

Mr. DENDY. A teaspoonful.

Dr. TYTLER.—Is that an experiment? Why did'nt he eat a pound?—Respecting the boy who took rice-water, why if I want to cure the cholera, I endeavour to expel the noxious rice from the bowels, and the effect of the rice-water was to increase the diarrhœa, and thus evacuate the deleterious matter. The remedy was discontinued in the very nick of time, and the child naturally got well; but if he had continued to drink rice-water, in all probability he would have died.—As to the fowls, that is a question of analogy. If all the fowls in the world were to eat rice and escape disease, while man could not, it would only enhance the value of my discovery. But is it a fact, that fowls can eat it? I know that at Jessore it was fatal to them, and it is notorious that fowls fed with paddy and rice on board of ships, are affected with terrible diseases. Their eyes rot out of their heads, and shocking sores are formed on them. I appeal to Captain Warren, who is present, if such is not the fact.

Captain WARREN.—You are perfectly right, Sir.

Dr. TYTLER.—I once fed a fowl with kun. Its beak mortified, and the animal died in three weeks; and a young goat, which I also fed with kun, died in less than seven days. Salvaresa tells us that the pestilence which raged in 1764 in Spain, first commenced amongst the fowls which ate the corrupted corn. The colour of the rice with which the lady fed her fowls, mentioned last Monday, has not been stated.

GENTLEMAN.—It was quite black.

Dr. TYTLER.—Then I don't understand it; but observe; such is the very rice which Mr. Headland says no soul buys for any purpose, and which another gentleman says is not to be found in England. It is asked me if the rice which I purchased in this city was rice of the growth of 1817. I believe that it was, in consequence of the number of shrivelled grains which the sample contained, and that it has been in store from that time. Gentlemen, as yet, the light is only shining *against* the door which I am trying to open. I cannot open it without the aid of the profession. It is they which must let the light through the door.—Gentlemen, I fear that rice is in very many respects superseding the wholesome wheat of England, the oatmeal of Scotland, and the potatoes of Ireland. I have done my duty in this matter, and I sit down with the full conviction that yours will not be neglected. *(Hear, hear, hear.)*

The members now rose to leave, the usual hour for departure having some time elapsed, but they were stopped by a remark from

Mr. DENDY, who said that the Society had a duty to perform to Dr. Tytler, which ought to be discharged at once. After the time he had devoted to the Society, it was incumbent on them to return Dr. Tytler their thanks for the communications he had made to them, and if it was not inconsistent with the custom of the Society, he should beg to move a vote of thanks to him.

The PRESIDENT said there could be no doubt that the best thanks of the Society were due to Dr. Tytler. They had said at first that they did not mean to sit in judgment on his statements, and therefore they could not now attempt to record an opinion on them, though the mind of no gentleman could fail to be impressed with the facts he had communicated; but as a vote of thanks did not pledge the Society to any *opinion*, he warmly accorded with the suggestion.

Dr. THOMAS BLUNDELL intimated, that he should move as an amendment to the vote, that the subject be adjourned to next Monday, as many gentlemen had yet had no opportunity of speaking on it. A vote of thanks was but a bad compliment to Dr. Tytler, after the immense pains he had taken to communicate information to the Society. An adjournment would be more worthy of the Society.

Mr. DENDY felt sure, that as the ques-

tion would be still *sub judice*, Dr. Tytler would not thank the Society for an adjournment.

Dr. BLUNDELL wished the adjournment then to take place, if not to next Monday, to some more convenient time.

The PRESIDENT said that would mean nothing, as the subject could be reintroduced at any time by any member. He should now, therefore, put the amendment. The result was, For the adjournment to next Monday, 8. Against it, 12. Thus about forty gentlemen did not vote at all on the motion. The motion was then put—

"That the cordial thanks of this Society be given to Dr. Tytler for the information he has communicated to the members relative to the production of cholera in India by the use of deleterious rice, and for his having established the fact, that similar deleterious rice is now selling in the markets of England."

For the motion, hands were held up all round the room, amid cries of "all," "all," "unanimous." For the contrary, none. Applause followed the announcement. The PRESIDENT then presented the thanks of the Society, in a brief speech, to Dr. Tytler, who concisely acknowledged the compliment, and the members separated.

*** We have since learned that vomiting, as well as diarrhœa, was a prominent symptom in the cases mentioned in this journal, three weeks since, as having occurred at the Asylum in the Hackney Road.*

*** Since the above discussion took place, Mr. Birtwhistle has forwarded us the following:—He says, "That during the time he was in China the Lascars on board the country ships, who lived exclusively on rice, were attacked with cholera; whilst in the American and European ships, in which rice was not an article of diet, he did not witness a single case. The case of the third officer in his ship (the *Sarah*), Mr. Coleman, is deserving of notice. This man was passionately fond of rice and curry, and one day went out to Dungaree, a low resort for sailors in Bombay, on purpose to have what he called a good "tuck out" of his favourite food; he came on board congratulating himself on the excellence of the meal he had made. Two hours afterwards, however, he was attacked with cholera, and although previously a remarkably healthy and robust man, died in eight hours.—In this case the secretion and evacuation of urine were carried on copiously."

PRODUCTION OF YELLOW FEVER AT ANTIGUA BY RICE.

To the Editor of THE LANCET.

SIR,—Reading in your Journal Dr. Tytler's statement relative to the production of cholera in India, from the use of bad or damaged rice, I was struck with a curious coincidence—the origin of *yellow fever* at Antigua in, I think, 1816, from the same cause. A vessel, with a large quantity of rice on board, was wrecked there in that year. The rice was strewed along the shore, and collected largely by the negro population, amongst whom fever shortly after commenced to a great extent, and proved very fatal. From the investigation consequently made by the then governor, Sir B. D'Urban (by whom, in 1827, at Demerara, the circumstances were stated to me), this fatal fever was proved to have originated amongst all those who had collected, and had in possession, or had partaken of, the damaged grain. I remain, Sir, truly yours,

W. HACKET, M.D.,
Surgeon to the Forces.

Newry, Oct. 18, 1833.

PRODUCTION OF CHOLERA BY RICE AMONGST BELGIAN TROOPS.

THE subjoined letter, addressed to Dr. Tytler, has been sent to the Editor by that gentleman, with a request that it might be published in the present Number of THE LANCET.

To Dr. TYTLER, *&c. &c. &c.*

"DEAR SIR,—Having heard your statements last night at the Medical Society, I beg leave to send you the following facts, which you are at liberty to use in any way you please:—

"In July, 1832, I was specially ordered by the Belgian Minister of War to proceed to Mons, to take charge of the depôts of the 2d Chasseurs *a cheval*, and the 9th Infantry, which two regiments were suffering serious losses from cholera. On my arrival, after inspecting the barracks, I

---

* ERRATA.—In Dr. Johnson's speech at the London Medical Society last week, page 147, line 32, from top of col. for "immensity" of the prisoners, *read* immunity.—Page 116, previous No., col. 2, line 40, for "Canada," *read* Chandy.—Page 113, col. 2, line 12, for "rigidity" *read* frigidity.

ordered them to be immediately washed with quick-lime, and afterwards well fumigated. After giving these orders, I proceeded to the kitchen to taste the soup and bread, when I observed at the bottom of the copper a great quantity of rice, and the officer who accompanied me asked me "if I thought the rice produced the *rice* stools which the soldiers had prior to and during the disease," or words to that effect. Without then being in possession of the invaluable facts which you, Sir, brought forward at the two last meetings of the Medical Society at which I was present, I said that the soup was thick enough without the rice, and that it should be omitted. The direction was complied with, and from that time we had but one case of cholera.

"Thus this dreadful scourge disappeared with the prohibition of the rice, and I do most sincerely think that the question you have brought forward deserves the serious attention of every practitioner in Europe, as it appears to me to be the opening of a new era in Medical science.

"I have the honour to remain,
"Yours very respectfully,
"E. S. BLUNDELL.

"Oct. 22, 1833,
"13, Orchard-street, Portman-square.

"P.S. Should you wish to see the official documents, I shall have pleasure in laying them before you."

HORROR OF RICE IN MADRAS.

A letter, which appears in the London daily papers of Tuesday and Wednesday last, dated *Hurkaru* Office, Calcutta, April 20, contains the following paragraph:—"The natives of Madras still continue to suffer all the horrors of famine, in spite of the humane exertions of those who do not immediately feel the effects of the scarcity. *Strange to say*, however, vessels which proceeded from hence laden with rice have absolutely been obliged to come away again, *without selling a single bag!*"

PETITIONS FOR MEDICAL REFORM.

To the Editor of THE LANCET.

SIR,—As your valuable journal has a very extensive circulation amongst the general practitioners of medicine, perhaps I may be permitted through it to point out to my professional brethren, both in town and country, who are anxious to have themselves put on a just and respectable footing, that they should lose not a moment in preparing petitions for the removal of their grievances, to be presented to both Houses of Parliament immediately on their reassembling, when the legislature is in a great measure pledged to consider the question of medical reform. It is ardently to be hoped that the leading members of this class of the profession will rouse themselves, and call meetings in every town in England and Wales to adopt such measures as seem meet for carrying their views into effect. If those practising in the metropolis were to set the example, there can be little doubt of its being generally followed in the provinces. I remain, Sir, yours with all due respect,

A GENERAL PRACTITIONER.
October 17th, 1833.

"DOCTOR WHITSED."

To the Editor of THE LANCET.

SIR,—You have admirably displayed three of the medical gentlemen who have, I find, been elected to the vacant situations at the Aldersgate-Street Dispensary; but a fourth remains without the "*broad arrow*,"—I mean Dr. Whitsed.

A "*Mr.* Whitsed," about fifteen years back, practised as an apothecary at Peterborough; and, if I mistake not, was one of the medical servants of the dispensary there. I was then an assistant to a surgeon, of extensive practice, a few miles from that city, and often heard him reprobate, in the strongest terms, the "infamous manner" in which patients (*well able* to pay their medical attendant) were received at that *charitable* institution! On first starting, all the medical officers gave their advice gratuitously, but, shortly after, some remuneration was talked of, and I know that *one* of them (but which one I cannot exactly say) had a gratuity allowed him,—a gratuity for attending patients well conditioned in life, and at an institution designed for the poor alone. This *Mr.* Whitsed emigrated to some street near Bedford or Russell Square, but how he acquired the right to have the letters "M.D." tacked to his name, I know not. I recollect at Peterborough, that he was considered very "moderate" on the score of ability, and must be a miserable substitute for a man so talented as Dr. Clutterbuck. Enclosed is my card of address; and I am, Sir,

AN OLD READER AND CORRESPONDENT.
October 20th, 1833.

THE LANCET.

London, Saturday, October 26, 1833.

THE election at the Aldersgate-Street Dispensary has terminated, and WHITSED, CASWALL, YATES, and WYATT, have stipulated to become the supple agents of a committee which has offered the grossest insult to the medical profession that was ever witnessed or recorded. Yes, CASWALL, YATES, WHITSED, and WYATT, are now the servants, the medical swabs, of the non-medical committee of the Aldersgate-Street Dispensary. The masters and servants are well matched. They are entitled to offer each other friendly congratulations on their success in this their new crusade against science and charity.

The ceremony of the election was appointed to take place on Friday week, at ten o'clock, and the house of the Dispensary was destined to be the scene of the exhibition. Ten o'clock having been the hour named for the commencement of the proceedings, the Editor of this journal did not consider that he was late in his attendance when he joined the meeting of governors at fourteen minutes after ten. Yet, lo! when he entered the room at that period, that is, at fourteen minutes after ten, the election had not only commenced, but, in reality, had terminated. With respect to WHITSED, YATES, CASWALL, and WYATT, the first of the four had returned thanks to his condescending benefactors, and YATES was in the act of speaking, or, rather, stammering forth his obligations, when the gloomy and disgraceful spectacle was opened to the Editor's view.

Whether WILLIAM YATES *felt* grateful, it is impossible for us to say, as he *looked* the very picture of misery and despondency. In short, had he in a criminal court exhibited such a countenance, when under trial for some heinous offence, his appearance would have more than half condemned him. Precisely the same may be said of CASWALL.

On the speeches we can offer no comments, as, in reality, there were none made; but the *attempts* to speak furnished the best possible testimony of the disturbed condition of the minds and feelings of the degraded parties:—

YATES "hoped—he trusted—that he "had done nothing wrong, and—labour "to promote the interests of the charity."

CASWALL, pale as death, said "Mr. "Chairman and Gentlemen—Mr. Chair-"man—Sir—Gentlemen—five years ago "— he — came forward — he had come "forward again—he he hoped he had "acted in a straightforward manner—in "in a straightforward manner. He was "ready to vindicate his conduct—to vin-"dicate—he, he, yes, he was ready to vin-"dicate it—there—or any where—any "where—there."

WYATT uttered but a single sentence. He "hoped that he should show his gra-"titude by his attention to the patients."

These confessional performances having ended, Mr. SAUL, the well-known radical reformer, moved, that as there was still a vacancy in the office of physician, advertisements for a candidate should be forthwith inserted in the newspapers. This motion having been seconded and put by the Chairman, was carried. Mr. HEWETT, who signalised himself at the late general meeting, by attacking the character of the ex-medical officers, and also that of the members of the medical profession generally, rose, as he said, to propose a vote of thanks to the Chairman, Mr. HERRING, the druggist. The commencement of Mr. Hewett's peculiar oratory was the signal for our departure, and we quitted the room at precisely twenty-two minutes after ten.

Now observe. What was the business which had been transacted in the third part of one hour? The governors had assembled—the chairman had been appointed—the business of the meeting had been explained, either by the chairman or the secretary—the four candidates had been proposed—the nominations had been seconded—the candidates had been declared duly elected—the four most respectable and worthy officers had attempted to speak their thanks—a motion proposing to advertise for a third physician, to fill up one of the still vacant offices, was made, seconded, put to a show of hands, and carried—and a motion for a vote of thanks to the chairman was proposed—all these things were accomplished, in the space of twenty-two minutes! Singular, too, the money-vote law had completely failed to effect one of the avowed objects of its promoters, viz., to secure a numerous attendance of governors at the elections for medical officers—as there were not thirty subscribers present, including the members of the committee, at this unparalleled, scandalous, and abominable election. Still, there were too many to witness, and participate in, the victory which meanness and cruelty had gained over honour and benevolence. Nothing, however, could exceed the sombre character of the exhibition. As to *charity*, it is downright profanation to use the word in connexion with the disgusting details of such a ceremony. It appeared to be the reign of guilt, for if we were to judge from the countenances of the majority, we should declare, unhesitatingly, that the most ignoble passions had been in operation on the occasion,—that the vilest feelings of human nature had governed the proceedings,—that hatred, pride, and revenge, had asserted their infamous sway,—and that the fair hand of CHARITY was about to be plunged deeply into the blood of the victims destined to be sacrificed under the dictation of commercial and professional cupidity.

In reviewing the circumstances which led to this election, there are two points of main importance. We refer, of course, to the positions which were at first occupied by the contending parties. The Committee of the Infirmary, on finding that the funds of the Institution were decreasing, set on foot an inquiry into the cause, and having discovered, from the records of the establishment, that the contests of former years in the election of medical officers had brought an accession to the treasury in consequence of votes made for the occasion, those acute gentlemen recommended to the governors a return to the old system, and that the law enforcing a six-months' payment as affording a right of voting at the elections, should be rescinded.

Now it must be confessed, that under the "six-months regulation," most gross abuses have been perpetrated, and many nefarious jobs rendered completely successful to the parties engaged in them. Without at this time branching off into particulars, it must be acknowledged that the government of the hospitals, infirmaries, and dispensaries, of this metropolis, and of those even which exist in our great country towns, is founded upon the most obnoxious principle—that it is narrow-minded according to the letter of those institutions, odious with respect to the spirit of their law, and both torturing and destructive to the poor in its tendency.

If it be asked, then, whether the Committee of the Aldersgate-Street Dispensary desired to establish a practice which was still more reprehensible than was to be found in any system yet in operation; the reply "No" may be given without hesitation, because in many of our dispensaries, in many of our infirmaries, the money-vote fraud is in full force. Besides,

we will not assert that a tradesman, a guinea subscriber of six months' standing, is more competent to decide on the qualifications of a *medical* practitioner than is one who has paid his subscription only three days, and, as we alleged in July last, with reference to this class of voters, "the proposition for preferring the "vote of a fishmonger or a fellmonger of "six months' existence, to one of three "days' duration, in the selection of a "*medical* officer to a charity, is, assu- "redly, bottomed in absurdity."

But it is something far worse than absurd, for men who profess to be charitable, to require that those medical officers who undertake to discharge the duties of their offices gratuitously, should be required by the laws of the dispensaries to purchase their places, and thus supply the main portion of those funds which certain meddling busy-bodies claim the credit and humanity of subscribing. It was against this vile, this shameful injustice, that the ex-medical officers raised their voices, and most honourably determined not to continue in an establishment in which such an infernal principle was openly, audaciously, sanctioned. For, be it remembered, all disguise on this head was out of the question. The committee had said, in so many words, "The absence of medical contests "leads to a loss of funds, and if we have "recourse in future to the money-vote "scrambles in these elections, our coffers "will be replenished." The ex-medical officers, then, have, by their conduct, nobly sustained the respectability and independent character of the profession. There was no vacancy, there was no coming election. They were firmly seated in their offices. There was no insult offered to *them*, individually, by the proposal; but the insult having been levelled at the profession generally, and a deadly blow being directed against the suffering poor, they resigned—threw up their offices at once—rather than associate with, much less act under the direction of, men who had unblushingly promulgated the Draconian decree, "that medical officers in a medical charity, were henceforth to be open to the highest bidders." Morality and talent were to be outweighed by the more ponderous influence of shillings and pence.

Unquestionably, then, the ex-medical officers of the Dispensary are entitled to the respect and gratitude of every collegiate practitioner of medicine. This acknowledgment, indeed, comes somewhat late, for the approving voice of their respectable and honourable brethren has resounded from every town in the kingdom, from every street in the metropolis.

"But," it may be asked, "has not the "election of WHITSED, YATES, CAS- "WALL, and WYATT, to four of the "offices which were so nobly relinquish- "ed by Drs. BIRKBECK, CLUTTERBUCK, "LAMBE, ROBERTS, SALMON, and COUL- "SON, proved that one moiety of the pro- "fession is as mean-spirited, grovelling, "and narrow-minded, as the other half is "high-minded, learned, and honourable?" —Had there existed two more YATESES, or two more CASWALLS, or two more WHITSEDS, or two more WYATTS, we might have found it impossible to answer the question satisfactorily. Had there been two other individuals belonging to the profession who coveted the honour of dishonouring their brethren, and had canvassed for that mark of CAIN upon their brows which already figures so conspicuously on the foreheads of the elected, the Dispensary Committee might have boasted, with impunity, of the degradation of the whole profession. The motion made on the day of election for another candidate, however, speaks volumes in attestation of the *esprit de corps*, the independence, and the integrity, of English medical practitioners. Observe, that though there were

six resignations, there have been but *four* elections, for there were but *four* candidates.

The Committee cannot now say that "there were one hundred candidates for the offices," that they "were literally "pestered by applicants for the vacant "places,"—as they have found but four men who were sufficiently indifferent to the best interests of the poor, and of the science of medicine, to renounce their allegiance to a just system of medical polity. That motion for *another* candidate—that proposal to advertise for a fifth—was enough, one would have thought, to have palsied every limb, and deadened every sense of the four beings who were thus explicitly told that another—THE LIKE OF ONE OF THEM—was not to be found in the ranks of the whole of the medical body. Self-convicted, self-tortured, and, possibly, at that moment self-despised, there they stood, attesting in their conduct and persons, that, out of thousands of physicians and surgeons, not one was PREPARED to partake of their shame—of their irremediable disgrace. That another may be found to join them, we shall not dispute. But whoever that other may be, the wretch has hesitated. And should one come, what will he be? The dolt, the scum, the offal, the cast-off ninny, of one of our hospitals. For it is *especially worthy of remark, that the physicians and surgeons of our hospitals have refrained, with two exceptions, from expressing their disapprobation of the conduct of the non-medical committee.* Often, often, have we denounced the *butcheries* which have been practised in our great charitable institutions. The elective system of the hospitals is one of MONEY, of FAVOUR, of FAMILY INTEREST. The man of genius fills no important place in them unless by chance. What is the consequence? The maltreatment, the destruction, of the poor. Let it not be supposed that we employ terms which are unwarranted by the circumstances of the case; for Mr. LAWRENCE, in a letter now lying before us, makes distinct reference (in allusion to the "good effects which "have been produced by THE LANCET in "our hospitals generally") to the "*murderous* operations which have been performed at St. Bartholomew's Hospital." A more sufficient authority cannot be required.

In noticing the conduct of the hospital functionaries on this occasion, can it have escaped remark that Drs. ELLIOTSON and ROOTS, two of the physicians of St. Thomas's, were the only gentlemen present at that meeting, out of upwards of seventy physicians and surgeons who belong to the great medical metropolitan establishments? Here we have a tolerably clear proof that the hospital officials do not sympathise with the body of the profession on this occasion; and that they have not sympathised with it *heretofore*, has been proved at least a thousand times in the pages of this Journal. The dispensaries and infirmaries are regarded by the whole tribe of hospital Bats, as snuggeries,—nurseries, where their nestlings may first mangle their prey. The dispensaries, in fact, are the preserves in which, through the kindness of non-medical committees, the physicians and surgeons of our great hospitals are permitted to issue their licenses to kill,—those licenses being always placed in the hands of their apprentices or "house surgeons." CASWALL and WYATT, for example, *have just emerged from the office of "House Surgeon in St. Bartholomew's Hospital"*—an office not open, be it remembered, to the honourable, the industrious, the meritorious student, but to the man who is the first to offer seventy guineas for it. Thus (having obtained those situations through the aid of money) such men consider that they are to resort to similar means in at-

taining offices of trust in every other situation.

But, did not the physicians and surgeons of St. Bartholomew's hospital enter their protest against CASWALL and WYATT becoming candidates for the offices of surgeon at the Aldersgate-Street Dispensary? Did they not show those ex-house-surgeons their doors, and forbid them their presence? It is too true that they did not. On the contrary, the very amiable and respectable medical officers of St. Bartholomew's Hospital presented the candidates with most flattering testimonials, and earnestly recommended them to the "favourable consideration of the governors!" Thus, the physicians and surgeons of St. Bartholomew's hospital have directly, and the physicians and surgeons of the other great hospitals (with the two honourable exceptions already mentioned) have indirectly, made common cause with the non-medical trading Committee of the Aldersgate-Street Dispensary—have aided and abetted the ignorant persons who insulted the ex-medical officers of the Dispensary,—and have shown, as far as they possibly could, their abhorrence of a principle which is most warmly sanctioned by all the legally-qualified members of the profession in the metropolis, who are unconnected with such establishments, and by all the country medical practitioners, without exception. Much yet remains to be said on this subject.

Cholera in Paris.—The number of new cases of cholera in Paris, remains nearly in the same proportion as that mentioned last week. On the 9th of this month, only six patients were received into the *Hotel Dieu*. Two of these died. On the 10th the number of patients at the same hospital was only four, and on the 11th five, of whom three died. As we before stated, the symptoms are identical with those of the former epidemic, and the mortality is fully as great in proportion to the number of cases. These facts should have borne the date of our last Lancet, but want of space caused them to be excluded from that Number.

Statistics of Accouchements which have taken place at the Maternite, Paris, during Four Years.—From June 1829 to June 1833, there were born 10,742 children. Of this number 10,262 presented the summit of the head; 390 the pelvic extremities; 59 some portion of the trunk; and 30 the face. Of the children born by the head, 9,867 were born at the full period, 30 being brought forth dead. 395 were born before the full term. Of this last number, 34 had not reached the seventh month, and were not, consequently, viable; 89 were born in a putrid state. There only remained, therefore, 278 born before term which could have lived, and, of these, 48 died (one in five or six). Amongst the 391 cases of pelvic presentation, 238 were at term, and 153 before it. Of the former 7 were born dead, having been for some time dead *in utero*. Of the 231 which remained, 21 were born dead (one in eleven). Of the 153 born before term, 63 were dead at an early period, and 30 were born at a time when they were not viable. Of the 60 viable which remained, 10 were born dead, which gives a proportion of one to six.—*Jour. des Connais. Medicales.*

Generel Statistics of Births.—The following account, taken from the *Journal of the Statistical Society of France*, gives a curious scale of the proportion of male and female births in Europe; the result is the more worthy of attention, as it has been drawn from a scale comprising more than 70 millions of births, in which the cases have been meted:—

For every 100 girls born, there are born in Russia 108. 91 boys. In the provinces under Milan, 117. 61. In France, 106. 55. In Holland, 106. 44. In Pomerania and Brandenburg, 106. 27. In Sicily, 106. 18. In Austria, 106. 10. In Silicia, 106. 05. In Prussia, 106. 94. In Wurtemburg, 105. 69. In the Duchy of Posen, 105. 66. In Bohemia, 105. 38. In Great Britain, 104. 75. In Sweden, 104. 62. Giving a mean proportion of 116 boys for every 100 girls. The two extremes are formed by Russia and Sweden, and the same results have always been observed in the same country.

INTERCEPTED LETTERS.

"My dear Macmichael,—Fate seems to have decreed that those persons who ought to be the supporters of all that is legitimate, should one after another commit some rash act to weaken our sacred cause, and give it absolutely an immoral character. It is on a high moral feeling that our edifice was built, and on such alone can it remain secure. No sooner do the 'bread-pill' system of Macleod, and the advertising system of Mayo, Copland, Howship, and company, meet the public eye in the most odious and abominable shapes, than Brodie sends me a copy of the 'Rules of the Westminster Ophthalmic Hospital' by his friend Guthrie; a pamphlet which contains a specimen of the most barefaced charlatanism I ever beheld.

"What am I to say, my dear M., when I come to be *publicly* examined on the state of the profession in this metropolis, and am desired, *upon oath*, to state what are the benefits which the Colleges of Physicians and Surgeons have conferred on the public, when I have to admit, that their most important and sacred duty is to prevent quackery? Depend on it the eyes of our enemies are upon us, and nothing seems to escape them, however ingeniously we may contrive to conceal our views. This Eye Infirmary of Guthrie, which was, I must confess, justly satirised many years ago in The Lancet, I have openly declared my sentiments about, since it was first instituted, and never was there a more complete system of trickery played upon the public. I shudder at the idea of such a perversion of Christian charity. Guthrie could have known little or nothing of diseases of the eye when he was advertised as surgeon of this institution. Call on Sir Astley. I would also particularly solicit the attention of the Council of the College of Surgeons to this pamphlet of Guthrie. The only remedy I can see, would be, to cause it to be *reprinted*, either at the expense of the College or by a 'subscription,' omitting all the objectionable paragraphs. Let me solicit their attention to some of these, which appear to me monstrous, and introduced, no one can deny, for a *selfish* purpose. 'This hospital (page 8) has also been the means of introducing into the practice of medicine a *new* method of treating those *terrible diseases* which have often afflicted the fleets and armies of the country, as well as the distressed poor and infant asylums, under the name of Purulent or Egyptian Ophthalmia, which *has proved more effective than any hitherto known*, and gives every reason to believe that these complaints will, in future, be suppressed *as soon as they may appear*.' Now I declare nothing can exceed this. The next paragraph which I presume to point out to the Council of the College will be found in page 12:—'Every surgeon of this hospital shall, on attaining his sixtieth year, be appointed a consulting-surgeon!' The meaning of this is obvious. Guthrie is getting *old*, and this regulation will secure him a place *in his dotage*! But the most cruel of all is the following, which is evidently pointed at that poor creature Alexander, whose character has been so well delineated by the German traveller, but whom notwithstanding we ought all to patronise, as he is a zealous supporter of the 'divisions of the profession,' and seldom presumes *to write a prescription*. In order, says Guthrie (p. 8), to ensure the continuance of this course of practical instruction, it is *the constitution of this hospital* that every surgeon belonging to it shall 'also be the surgeon, or assistant-surgeon, of an hospital for the treatment of diseases generally,' and so forth.

"Your exertions, my dear Mac., will be, on this occasion, of great importance, and you must exert yourself according to the difficulty of the task. You might give Alexander a hint to be very cautious at this eventful period of investigation, and pay no attention to any *hits* that may be made at him, however disagreeable.

"I wrote to Mr. Brodie, and you may repeat to him that I am determined to pay no more *subscriptions to Dr. Roderick Macleod*. Had his journal been even decently conducted, it ought long before this time to have paid its expenses; and if I am to give away *any more money*, I would prefer doing so for the support of something *new*, for as my old, dear, kind, friend, George the Fourth, was often told by Sir William Knighton, 'it would cost much less money to build a new palace than to repair that of Windsor.'—Believe me always your sincere friend,

"* **** *******.

———, Leicestershire."

ROYAL COLLEGE OF SURGEONS.

Extract from a letter from Leicestershire.

"You will perceive from the accounts of the funds of our college, laid before the House of Commons, that we are considerably *minus*, and, of consequence, the 'Ways and Means' have cost us all much serious deliberation. The result has been that we have unanimously agreed that our worthy president shall petition the

King to permit us to confer *degrees*, the profit of which would keep all straight. Look at the sums which the Surgeons have received from students for the support of their college and museum, and to put into their own pockets. A St. Andrew's or Aberdeen degree costs about 30*l.*; and if we were to lower the price, say to 20*l.*, we should command the market."

THE REVIEWING SYSTEM.

"Caw *me*, caw *thee*." Mayo, surgeon of the *Middlesex* hospital; Brodie, surgeon of *St. George's*. Brodie, one of the Council of King's College; Mayo one of the professors; and, possibly, the only professor whom Mr. Brodie himself was permitted by Sir Henry Halford to nominate. Brodie writes a book. Mayo is called upon to write a "brilliant review" of it. Such is the system of the bats!—*Exem. gra.*:—

"Dear Sir—I have left Brodie's book for you, in hopes that it may tempt you to write a brilliant article for the *Medical Quarterly*. I shall leave town for a fortnight, and when I come back I shall expect, &c. &c.

"E. A. D*M*L*R.

"8, Southampton ——.

"To Herbert Mayo, Esq."

ST. BARTHOLOMEWS HOSPITAL.

SYPHILITIC IRITIS.

Henry Evans was admitted into Luke's Ward, on the 11th of September, under the care of Mr. Stanley, and presented the following appearances. The iris was of a dirty-brown colour, and did not act on the stimulus of light being applied; there were adhesions at the upper part of its internal margin, causing some irregularity of the pupil, and the vessels of the conjunctiva were highly injected. The patient states that three months since he had a chancre on the glans penis, for which he underwent a course of mercury, by which its cure was effected. About ten days ago he first felt some pain in the forehead over the left eye, which was the one affected, and this continued up to the time of his admittance. He was ordered twenty leeches immediately round the eye, and three grains of calomel with a third of a grain of opium to be taken every six hours.

12. As the pain was unabated, twenty more leeches were applied, and the calomel and opium continued. On the 13th the mouth was considerably affected, and the patient was much better; the iris had almost regained its natural colour, and the pain in the forehead had entirely ceased. The extract of belladonna was ordered to be applied round the eye, and five grains of blue pill to be taken every night and morning, as Mr. Stanley thought it advisable to keep up the mercurial action some time longer.

14. The pain has returned in some degree; twelve leeches to be applied directly.

15. Much better; the pain has disappeared; the adhesions of the iris can only be observed when the pupil is dilated by the belladonna.

17. The eye seems to have regained its natural appearance, and the man is free from complaint.

ABSCESS OF THE LIVER, WITH HYDATIDS.—OPERATION.

Rebecca Clarke, aged 62, was admitted into Treasurer's Ward, on the 23rd Aug., under the care of Dr. Roberts. She gave the following history of her complaint. Three months ago she felt pain in the lumbar region, arising, as she supposed, from a strain: she afterwards became hot and feverish, and passed a great quantity of fluid, resembling blood, with her urine, for two or three nights, when this suddenly ceased.

She complained, when admitted, of a pain in her side on inspiration, and great relaxation of the bowels. Has been treated for diarrhœa, diseased liver, and cough.

Sept. 25. Mr. Stanley was requested to see her to-day, on account of a tumour which first appeared on the 31st August, and has been gradually increasing up to this time. The tumour extended from the right lumbar region, across the abdomen to two inches on the left side of the umbilicus, downwards to within three inches of Poupart's ligament, and upwards as far as the seventh rib. There was œdema of the lower extremities; great difficulty of breathing; the superficial veins of the thighs were varicose; the tongue dry and foul; there was slight pain, on pressure, over the whole abdomen; the pulse quick but feeble; the urine tinged with bile. Mr. Stanley considered the tumour to be an abscess of the liver, but said that it might be a cyst containing hydatids. He thought it advisable to puncture it immediately, as the symptoms appeared urgent, and the constitution was already considerably affected. Mr. Lawrence, who was consulted on the case, objected to the immediate performance of the operation,

as by postponing it time would be allowed for the formation of adhesions between the walls of the abscess and the neighbouring integuments, and thus prevent effusion into the cavity of the peritoneum. Ordered a grain and a half of opium every night.

26. Tongue more dry and brown; pulse 104, and feeble; the pain on pressure over the abdomen exacerbated since the numerous examinations made yesterday; the difficulty of breathing also increased; a profusion of bile in the stools. She complains of inability to make water.

2 o'clock p.m. Mr. STANLEY and Mr. EARLE examined the tumour, and agreed on the propriety of puncturing it; this the former gentleman accordingly did, when there was a gush of fluid to the amount of four pints and some ounces, which on examination proved to be hydatids mixed with pus of an extremely offensive odour. The wound was kept open by a lint tent.

3 p.m. Pulse 84 and fuller; great increase of pain on pressure; more anxiety of countenance. 18 leeches to be applied to the abdomen.

8 p.m. Pulse 122 and weak; tongue dry and covered with a white fur; pain a little relieved by the leeches; has passed some urine, and had one stool; has also had several shivering fits, but the skin is now hot; expresses a desire for sleep.

Ordered, of the liquor of the acetate of ammonia one ounce, of the wine of tartarised antimony one drachm, of laudanum half a drachm, to be taken directly.

27th, 11 a.m. Thinks herself better; pulse 95, small and irritable; the tongue covered with a brown fur, but moist; perspires freely; has passed a good night, and had one scanty, watery, evacuation by stool; the pain on pressure over the abdomen rather diminished but still considerable.

Three p.m. Pain on pressure much diminished. On removing the tent, four pints and four ounces of pus and hydatids flowed from the opening. Her bowels have not been opened to-day. Ordered calomel and jalap, to be followed by a saline draught, with sulphate of magnesia. Simple dressing to the wound.

Eight p.m. Has had a copious watery motion, and has also passed a large quantity of high-coloured urine. Pulse 103, with a slight jerk; less pain on pressure; the tongue dry and brown; skin moist.

28th, eight a.m. Pulse 104 and jerking; tongue much more clean; pain on pressure almost gone; four or five stools with an excess of healthy bile; skin moist; countenance more cheerful.

Nine p.m. Tongue becoming dry and brown; has a little more pain. Has not had a motion since four o'clock. Three drachms of the sulphate of magnesia to be taken directly.

28th, a.m. Much better; tongue more clean; bowels open; pulse quick; very little pain.

Eight p.m. Pulse 90 and soft; tongue covered with a moist white fur; has had one stool of a healthy appearance since the morning.

30. Bowels open; stools healthy; the pulse 96 and soft; no pain remaining on pressure over the abdomen; there is a great discharge from the wound; the tongue clean, and the patient in every respect much better.

RUPTURE OF THE URETHRA.—OPERATION.

George Bachelor, aged 28, was conveyed to this hospital October 4. States that since yesterday at one o'clock he has passed no urine, although a medical gentleman had endeavoured to relieve him by the introduction of a catheter. The external parts of generation had a red appearance, and there was an effusion of urine in the perineum and anterior part of the scrotum. In attempting to pass an instrument, it seemed to be arrested by a firm body situated at about the membranous portion of the urethra; on using a little force, the catheter appeared to slip into some canal out of the course of the urethra. After many fruitless attempts to reach the bladder, it was deemed advisable to perform the following operation. An incision was made on the left side of the raphé of the perineum into the distended cellular tissue beneath, when a quantity of urine, mixed with blood, escaped from the opening. This afforded the greatest relief to the patient. A poultice was applied to the wound, and there being a brown and dry tongue, with other febrile symptoms, he was ordered one ounce of castor oil, to be taken immediately, and the saline effervescing mixture every six hours.

He says that six years ago he contracted a gonorrhœa, which was followed by a difficulty in passing his urine. This was relieved by the use of the bougie, since which time he has been perfectly well until about a week since, when in assisting some men to lift a heavy weight, he suddenly perceived a swelling in the perineum and anterior part of the scrotum; on attempting to void his water, the stream was much smaller than natural. Two days after this he was unable to pass any urine without pressing on the tumour.

Yesterday, October 4th, there was a total obstruction of urine.

5. Pulse 84, full and rather hard; tongue brown in the centre, but clear and moist at

the edges; skin rather dry and hot; is thirsty; bowels freely open; complains of no pain.

(To be concluded.)

ST. GEORGE'S HOSPITAL.

FRACTURE OF THE SKULL, AND INJURY OF THE LEFT LUNG.

JOHN WATKINS, admitted August 26, at 10 p. m., having been run over and injured by a gig. He was brought in in a complete state of collapse, insensible, without pulse, and with the pupil contracted; some wine was administered, which restored him a little. The only perceptible wound was one on the scalp over the anterior and superior portion of the frontal bone, about two inches in extent, denuding the pericranium. The edges were brought together by strapping. He coughed up some considerable quantity of blood (arterial as we understood), and the house surgeon reported that the blood could be felt *rattling* (!) in his chest under the pectoral muscles.

27. Up to 12 o'clock he remained insensible under the depressing effects of concussion. At 2 p. m., when Mr. HAWKINS visited him, he had in some measure rallied, and the symptoms of incipient irritation were present. The pulse had risen considerably, but not sufficiently to warrant immediate venesection. The tongue was moist and slightly furred; the pupil of the left eye was dilated, and had been so since 4 a. m.; the right eye was closed, from effused blood; the motion of the limbs was slightly impaired; he had voided urine very freely, but the stools had been passed in bed. The house surgeon reported that he had had some convulsive attacks, but their precise nature could not be ascertained. The edges of the scalp wound were ordered to be kept in unison by adhesive plaster, and if the pulse rose, some blood was to be taken from the arm. Mr. HAWKINS remarked that the patient was not suffering from compression, but was labouring under an irritable state of the nervous system, produced by the concussion. With respect to the coughing up of blood, he said it most probably arose from ruptured lung (the left), as his breathing was oppressed, and although he could detect no fracture of the rib, yet the lung might be injured. In concussion it was most common, he added, for one of the nasal sinuses to be ruptured,* and blood to be discharged from the back of the mouth. With regard to the convulsions, they were sometimes caused by want of power, and sometimes by injury done to the brain, but he (Mr. H.) did not think there was any pressure on the brain in this case.

In the evening he was bled to ʒx, which had the effect of quieting him, and as was supposed preventing the return of another convulsive attack.

28. Much the same in most respects; does not answer questions correctly; is very noisy when disturbed; pulse quick, and irritable; bowels open; tongue cleaner; ordered to be bled to ʒxiv. In the evening the state of irritation increased to such a degree as to render the strait-waistcoat necessary. Mr. HAWKINS laid open the wound to some extent, but no fracture was detected.

29. Died at nine.

Necropsy.—On opening the head, and examining the base of the cranium, a fracture was discovered running from the right frontal prominence downwards and outwards, across the posterior surface of the orbitar plate, to the ridge of the sphenoids some effused coagulum of blood was in the track of the fracture, which Mr. HAWKINS supposed to proceed from the cavernous sinus. Some blood was also found effused under the inferior surface of the middle lobe of the brain, and in general the substance of the cerebrum appeared injected; patches of dark coagulum were seen here and there. On examining the thorax, no fracture of any rib could be discovered, but the left lung appeared broken down in several places, and much blood was effused. Nothing worthy of remark was found in the abdomen.

* We believe the boy had slight epistaxis soon after his admission.—*Rep.*

MULBERRY EXCRESCENCE AROUND THE MEATUS URINARIUS.

Mr. WALKER has a case of this nature under his care. The patient is a little girl, ætat. 9. When first seen, it grew over the inferior portion of the frænum, but by repeated applications of the nitrate of silver its growth has been checked and its size materially diminished. Such cases as these are rare in children. In females from 18 to 25 or after 60 years of age they are more common. Mr. WALKER had a case under his care at the Lock Hospital, in which he excised portions of the meatus at repeated times by the knife, destroying the surfaces by caustic, the irritation was, however, kept up by the female addicting herself to the vice of masturbation, and she eventually died while under the care of Mr. BABINGTON in St. George's Hospital.

PARALYSIS.—STRYCHNINE.—AFFECTION OF THE BOWELS IN CHILDREN, SIMULATING DISEASED SPINE.

Mr. HAWKINS has a patient in the hospital affected with paralysis. On his admission, the surgeon believed the affection to be dependent upon derangement of the viscera, &c. This, however, was found not to be the case, as when the latter were restored to a healthy state the paralysis was in no respect benefited. Electricity every week or ten days is being tried with some degree of benefit to the patient. Mr. HAWKINS in answer to some question from the pupils remarked, that he had not much faith in strychnine, and he believed it to be useful only in those cases where the cause of paralysis was a temporary one. Where there was any organic affection, he did not think it was of the slightest benefit. He never in his experience saw it produce any further effects than spasmodic twitchings of the limbs. There was an affection in children, simulating paralysis and diseased hip, which very frequently arose only from a disordered state of the visceral secretions. In such cases, shortening of the affected limb and flattening of the nates appeared; but if the case were examined minutely, it would be seen not only that the muscles and soft parts had shrunk, but that the bones also had ceased to grow, and that they were much smaller in size than, considering the age of the child, they ought to be. This affection would be gradually coming on for years, and if the functions of the primæ viæ were properly attended to and restored, the disease would gradually disappear. He did not believe that the neglect of this affection ever caused organic change or derangement of structure in the parts affected.

ADHESION OF THE CHEEK FROM DISEASE OF THE LOWER JAW.—A child is at present under Mr. HAWKINS's care, with this affection, from disease of the lower jaw, produced it is supposed by mercury. This has been stopped, and the inside of the cheek has adhered to the jaw, forming a cartilaginous band, preventing mobility. This has been divided, and a dilator used gradually every morning to open the mouth.

SCIRRHUS.—There is a man, an out-patient under the care of Mr. HAWKINS, with this disease affecting the gums, cheeks, and lower jaw. He has had the affection, he says, for a considerable time (about eighteen months or two years), and has been taking calomel and opium, with, however, but slight relief. The affection is too extensive and deep to admit of extirpation. The bronchiæ and lungs have been slightly affected with pain and cough, for which a blister and leeches have been applied with benefit. The man is a shoemaker.

There is also a case of scirrhus of the breast in a female out-patient, and Mr. HAWKINS is giving her the soap pill, with opium at night, and the following linctus to apply in the day, which relieves the pain more than anything else.

Conserve of Roses ʒi;
Solution of Acetate of Lead ʒiss;
Tincture of Opium ʒi.

BOOKS RECEIVED.

(From Dr. Witt.) A compendium of Osteology; being a systematic treatise on the bones of the human body; designed for the use of students. To which is subjoined an improved method of preparing bones for osteological purposes. By George Witt, M. D., Phys. to the Gen. Infirm. Bedford.

Die Leistungen und Forbscrhitte der Medizin in Deutschland im Jahre 1832. Von Dr. Bluff.

A medical school has at length been established in Nottingham, and a donation of 500*l.* to its funds is announced from the Duke of Newcastle.

A cons. read. and an occas. contrib. If books be "kept for that purpose," of course "that purpose" must be complied with. Single courses only might be paid for.

Delta. A paper on the discovery will shortly appear in the *Philosophical Transactions*. Perhaps Mr. Mayo himself does not understand it.

Chirurgicus. As yet the fund is not sufficient to admit of appropriation.

We have not room for the two letters respecting the introductory lecture in Aldersgate Street.

An Old Subscriber. By courtesy, not by right. The eligibility depends on the rules of the institution.

Mr. Trelawney. Such paragraphs are so numerous that we cannot give publicity to them in this journal. The rumour mentioned in the PS. prevails in many quarters.

Dr. *J. C. W.* The questions reached us, but their chief interest had passed.

Numerous communications intended for insertion are again excluded from our pages, although we this week present our readers with a supplemental sheet, *gratis*, in order to diminish the abundant store of matter awaiting publication. Our next Number shall possess a similar gratuitous addition.

The address from the Northampton Infirmary, the Colchester Memorial, and other public documents, shall have places in our next.